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ABSTRACT

This document provides tabular data on scientists, engineers, and technicians in manufacturing industries for 1980, as well as in non-manufacturing industries for 1981. The tables are arranged in six sections. The first three sections focus on scientists, engineers, and technicians in manufacturing industries for 1980 by major occupational group and detailed industry of employment, by detailed occupation and broad industry group of employment, and as a percent of total employment in the industry, and the relative error. The next three sections focus on scientists, engineers, and technicians in nonmanufacturing industries for 1981 by major occupational group and detailed industry of employment, by detailed occupation and broad industry group of employment, and as a percent of total employment in the industry, and the relative error. Although summary statistics included in the 1980 data have already been published, the data by detailed field, or by 3-digit Standard Industrial Classification code, are now presented for the first time. Therefore, the 1980 data are at the same level of detail as the 1981 data, providing researchers and analysts with comparable data for the two industrial categories. (JN)

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contents

Page

Section:

A. General 1
B. Technical Notes 3
C. Detailed Statistical Tables 7

section a

general

This report includes tabular data on scientists, engineers, and technicians in manufacturing industries for 1980, as well as in nonmanufacturing industries for 1981. Although summary statistics included in the 1980 data have already been published, the data by detailed field, or by 3-digit Standard Industrial Classification code, are now presented for the first time. Therefore, the 1980 data are at the same level of detail as the 1981 data, providing researchers and analysts with comparable data for the two industrial categories.

National estimates of employment in scientific, engineering, and technical (SET) occupations presented in this publication are based on data from the Occupational Employment Statistics (OES) survey. The survey is part of a larger Federal/State cooperative effort designed to produce national, State, and local data on occupational employment by industry for nonfarm wage and salary workers. The Bureau of Labor Statistics (BLS) has primary responsibility for developing survey procedures and providing technical guidance. State Employment Security Agencies implement the survey at State and local levels, developing current and projected employment statistics for their relevant labor markets. BLS conducts supplemental surveys in noncooperating States and aggregates data to provide national employment estimates.

In the midseventies, the National Science Foundation (NSF) recognized the potential use of these data for providing reliable estimates of the utilization of scientists, engineers, and technicians by private industry. Observation of trends provides insight into the dynamics of this labor market as occupational requirements respond to variations in growth among industries and to the impact of technological and other factors within industry. Since 1977, NSF has provided BLS with financial assistance to expand the survey's coverage of SET occupations and has ensured the development of national estimates by supporting data collection in nonparticipating States.

This publication presents estimates by 2- and 3-digit Standard Industrial Classification (SIC) codes. The 1980 estimates are comparable to the 1977 2-digit estimates published in *Employment of Scientists, Engineers, and Technicians in Manufacturing Industries, 1977* (Detailed Statistical Tables) (NSF 80-306). The 1981 estimates are comparable to the 1978 2-digit estimates published in *Scientists, Engineers, and Technicians in Private Industry: 1978-80* (Special Report) (NSF 80-320). Analyses of trends are also available: *Changing Employment Patterns of Scientists, Engineers, and Technicians in Manufacturing Industries: 1977-80* (Final Report) (NSF 82-321), and for the 1978-81 period, "Technical Employment Growth Accelerates in Selected Nonmanufacturing Industries," *Science Resources Studies Highlights* (NSF 83-321). Requests for information concerning reports based on the OES surveys may be addressed as follows:

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section b

technical notes

scope of the survey

The Occupational Employment Statistics (OES) survey is conducted over a 3-year cycle: manufacturing industries are surveyed in the first year; mining, construction, financial, and various service industries in the nonmanufacturing sector are surveyed in the second; and trade, communications, transportation, and public utilities are surveyed in the the third. Data in this report were derived from the 1980 and 1981 surveys of private manufacturing and nonmanufacturing establishments, respectively. The former are in Standard Industrial Classification (SIC) codes 20 through 39; the private nonmanufacturing establishments are in SIC codes 10-17, 60-67, 70, 72, 73, 75, 76, 78-81 (except 806), 83, 84, 86 (except 866), and 89. The reference dates of the survey were the weeks that included April 12, May 12, or June 12, depending on the SIC of the sampled unit. Geographically, the survey covered all 50 States and the District of Columbia.

method of collection[1]

Schedules for the OES survey were mailed to personnel offices of most sample establishments. Nonrespondents were pursued by two additional mailings at 6-week intervals, after which telephone followups were attempted. Field personnel visited those companies that were essential to the survey because of their large absolute or relative employment within a given industry.

Each industry being surveyed received a questionnaire in which occupational detail was limited to primary production activities. Abbreviated survey forms, in which the number of relevant occupations was further limited, were sent to small establishments to diminish the reporting burden and encourage participation. On each questionnaire specific occupations were grouped under broad census headings, each with a residual category for work functions not explicitly listed on the survey form. Each respondent was asked to identify, in the residual categories, any occupations for which employment levels were significant; surveys in subsequent years would then be revised to include such jobs explicitly.

limitations on analysis

Data collection methodology in the OES survey introduces several problems that should be taken into account when interpreting these data. First, the OES survey tends to understate requirements in specific occupational fields. Second, this same survey characteristic can be expected to overstate cross-industry differences in staffing patterns; the finer the level of detail, the more serious the problem. This occurs because an occupation will be listed explicitly on an industry's questionnaire only if it is judged to be a major job class; otherwise, it is enumerated in a residual category.

occupational and industrial classification

The OES survey collects data for approximately 1,650 occupations and combines two classification systems: The Dictionary of Occupational Titles (DOT) and the 1980 Census of Population. The DOT system is used to develop occupational categories and definitions because its classification scheme is detailed. Summary categories and residual groups are comparable to the broader categories used in the Census.

Industries surveyed were classified according to the 1972 SIC codes. Reporting establishments were categorized on the basis of major product or activity for the previous calendar year.

concepts

An establishment, such as a factory, is the primary sampling unit in the survey. In general, it represents a single physical location and engages primarily in one type of economic activity. When several, distinct activities are performed in a single location, each one is construed as being performed in an individual establishment, depending on whether separate payroll records and other criteria are met.

Employment includes several categories of personnel: Full- and part-time workers; workers on paid vacation or on other types of leave except extended leave; workers on unpaid short-term absences; salaried officers, executives, and staff of unincorporated firms; employees temporarily assigned to other units; and employees for whom the unit is their permanent duty station. Excluded from coverage are proprietors (owners and partners of unincorporated firms), unpaid family workers, and workers on extended leave.

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[1] A description of the OES survey can be found in Department of Labor, Bureau of Labor Statistics, *Occupational Employment Statistics Handbook* (Washington, D.C.: Supt. of Documents, U.S. Government Printing Office, April 1979).

Occupation refers to the job in which employees are working rather than to the one for which they were trained. Skilled personnel are an exception when engaged in the sale of scientific and engineering (S/E) equipment; such personnel are categorized in terms of their fields of specialization. Categorization as a scientist or engineer requires that an individual be working with a level of knowledge equivalent to that acquired by completion of a 4-year college course with a major in that field, regardless of whether a college degree was ever obtained. Employees who perform multiple functions are reported only once, in the job that is believed to require the highest level of skill. Working supervisors, who spend more than one-fifth of their time doing work similar to that performed by individuals under their supervision, are classified in the occupation most closely related to their work duties.

sampling procedures

The OES survey is a probability sample with a sampling frame based on lists of establishments covered by State Unemployment Insurance systems. Because each cooperating State selects its own sample, the reference date of the sampling frame varied according to when the last sample frame was updated and the survey was conducted. The reference used for sampling in the two supplemental States for the 1981 survey was the first quarter of 1980; that used for the one supplemental survey in 1980 was the first quarter of 1979.

The survey universe is stratified by industry and size of establishment unit since these characteristics are believed to be primary determinants of occupational staffing patterns. Nine size-classes were represented, based on the number of people employed: 1-3, 4-9, 10-19, 20-49, 50-99, 100-249, 250-499, 500-999, and 1,000 and over.

Reporting units with one to three employees were not sampled in all States. In such cases, this size-class was combined with the next largest to form a 1-9 size-class. Reporting units with 250 or more employees were included in the sample with certainty. Samples for noncertainty size-classes were developed to produce State estimates with target relative errors of 10 percent to 15 percent at one standard deviation. The latter relative error options were provided to States so that survey costs could be reduced and used either to set an overall sample size or to sample size within a particular SIC.

The accuracy and efficiency of State samples were improved through use of State-by-State coefficients of variance estimates (CV's) from previous surveys. An optimization procedure, relating total cell employment to industry size-classes, was used to allocate the sample to size-class employment. The samples were then collected systematically with equal probability of selection within each State/SIC/size-class.

In order to produce national employment estimates, BLS surveyed the State that chose not to participate in the OES program in 1981. Sample size for the supplemental States was developed by first determining the sample size required for national estimates in each 2-digit SIC with a relative error at one standard deviation of 10 percent. This was accomplished by analyzing CV's and occupational rates for a set of occupations from the previous survey. Establishments with 1,000 or more employees were included in the supplemental sample with certainty. This national SIC sample size was then allocated to the noncooperating State's size-class cells proportional to employment.

response

In 1980, usable responses were provided by 159,672 final eligible units from 111,860 establishments. The 1980 response rate was 70.1 percent based on units and 70.6 percent based on weighted employment. In 1981, usable responses were provided by 328,981 final eligible units from 239,598 establishments. The 1981 response rate was 72.8 percent based on units and 72.6 percent based on weighted employment.

estimation

A weight was determined for each sample unit from which a usable response was received. Each weight was the product of two factors: (1) The inverse of the probability of selection roughly indicating the number of establishments a survey unit represented; and (2) Adjustment for nonresponse resulting from either unreturned questionnaires or unusable information.

For each of the 3-digit SIC/State/size-class sampling cells, the nonresponse factor was calculated as a ratio:

$$\frac{\text{Weighted sample employment of all eligible units in sample}}{\text{Weighted sample employment of all responding eligible units}}$$

The sample employments were taken from the sampling frame. If the factor in a cell was greater than a predetermined maximum, the cell was collapsed with other homogeneous cells within the SIC until the factor for the combined cell was not greater than the appropriate maximum factor. If the collapsing procedure terminated before satisfying the constraint (i.e., no more cells were available to collapse), then the appropriate maximum factor was used. For the first six size-classes, homogeneous cells were determined to be other size cells within the SIC and State. For remaining size-classes, homogeneous cells were determined to be other State cells within the SIC and size-class.

A combined ratio estimate of occupational employment was used to develop national estimates using total employment as the auxiliary variable. The estimating formula is:[2]

$$P = \Sigma i \left[\frac{\Sigma_j \Sigma_k W_{ijk} P_{ijk}}{\Sigma_j \Sigma_k W_{ijk} e_{ijk}} \right] M_i;$$

where P = 2-digit industry occupational employment estimate,

i = 3-digit industry within a 2-digit industry,

j = size-class,

k = establishment,

W_{ijk} = weight after nonresponse adjustment in ith industry, jth size-class and kth establishment,

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[2] Computational forms for sampling variances of combined ratios and occupational estimates can be found in National Science Foundation, *Employment of Scientists, Engineers, and Technicians in Manufacturing Industries: 1977* (Detailed Statistical Tables) (NSF 80-306) (Washington, D.C., 1980).

e_{ijk} = total employment in ith industry, jth size-class and kth establishment, and,

M_i = population total employment in ith industry, obtained from the BLS Survey of Employment, Hours, and Earnings.

reliability of estimates

Estimates developed from a sample may reflect a condition other than that indicated by a complete survey of all establishments because either of two types of errors may be involved: nonsampling or sampling. Nonsampling error can be attributed to many sources including faulty design of questionnaires, failure of respondents to provide accurate information, or problems in recording, coding, or processing data. More serious nonsampling errors result either when a chosen sample fails to represent adequately the entire population or when nonresponding units from a well-designed sample differ from survey respondents. Statistical adjustments made for nonresponding units in the latter case further exacerbate resulting biases. Careful survey design as well as effective checks and controls can eliminate some of the problems attributable to sources of nonsampling error. In general, however, the magnitude and nature of these biases are unknown.

The second type of error, sampling error, occurs because observations are made on a sample, not on the entire population. Conceptually, this error can be defined as the difference between an estimate derived from a sample and the actual value that would be expected if the entire universe were surveyed. Because actual population values are rarely observed, sampling error is approximated by the difference between the survey estimate and the average estimate that would be derived from all possible samples.

Estimates of a sample characteristic and its relative error permit construction of confidence intervals with a prescribed probability that the value from a complete coverage survey of all possible samples is contained therein. The complete coverage value would be included in the range:

(1) From one standard error below to one standard error above the derived estimate for 68 percent of all samples.

(2) From two standard errors below to two standard errors above the derived estimate for 95 percent of all samples.

(3) From three standard errors below to three standard errors above the derived estimate for nearly all samples.

Sampling error in this report is expressed as relative error or the ratio of sampling error of an occupation to that occupation's employment estimate, expressed in percentage terms. The following example demonstrates interpretation of relative errors: Table C-3 indicates that there are 4,880 civil engineers employed in nonresidential building construction (SIC 1540) with a relative error of 7.86 percent. Thus, the chances are 68 out of 100 that the actual employment level would differ from the survey estimate, in either direction, by 384 (.0786 X 4,880); it is almost certain that the survey estimate differs by no more than 1,151 (3 X .0786 X 4,880) in either direction.

In this survey, as in others, particular care should be exercised in the interpretation of small estimates or small differences between estimates when relatively large sampling errors are indicated.

section c

detailed statistical tables

page

C-1. Scientists, engineers, and technicians in manufacturing industries by major occupational group and detailed industry of employment: 1980 9

C-2. Scientists, engineers, and technicians in manufacturing industries by detailed occupation and broad industry group of employment: 1980 14

C-3. Scientists, engineers, and technicians in each manufacturing industry as a percent of total employment in the industry, and the relative error: 1980 16

C-4. Scientists, engineers, and technicians in nonmanufacturing industries by major occupational group and detailed industry of employment: 1981 158

C-5. Scientists, engineers, and technicians in nonmanufacturing industries by detailed occupation and broad industry group of employment. 1981 163

C-6. Scientists, engineers, and technicians in each nonmanufacturing industry as a percent of total employment in the industry, and the relative error: 1981 167

TABLE C-1. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN MANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1980

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Total manufacturing	1,338.4	100.0	139.4	100.0	605.3	100.0	593.6	100.0
DURABLE GOODS	1,045.7	78.1	61.5	44.1	515.1	85.1	469.0	79.0
Lumber and wood products	7.3	.5	1.0	.7	1.2	.2	5.1	.9
Logging camps and contractors	1.5	.1	.1	.1	.1	(1)	1.3	.2
Sawmills and planing mills	1.7	.1	.5	.4	.3	(1)	.9	.2
Millwork, plywood, structural wood	2.3	.2	.3	.2	.4	.1	1.5	.3
Wood containers	(1)	(1)	-	-	-	-	(1)	(1)
Wood buildings and mobile homes	1.1	.1	-	-	.2	(1)	.9	.1
Miscellaneous wood products	.6	(1)	-	-	.2	(1)	.4	.1
Furniture and fixtures	6.6	.5	.4	.3	2.6	.4	3.6	.6
Household furniture	2.4	.2	.2	.1	1.1	.2	1.1	.2
Office furniture	1.6	.1	.2	.1	.7	.1	.7	.1
Public building and related furniture	.6	(1)	-	-	.2	(1)	.4	.1
Partitions and office and store fixtures	1.4	.1	-	-	.3	.1	1.1	.2
Miscellaneous furniture and fixtures	.6	(1)	-	-	.3	(1)	.4	.1
Stone, clay, and glass products	20.3	1.5	2.0	1.4	8.8	1.5	9.6	1.6
Flat glass	.7	.1	.1	.1	.3	.1	.3	.1
Glass and glassware, pressed or blown	4.7	.3	.4	.3	2.0	.3	2.2	.4
Products of purchased glass	1.1	.1	-	-	.4	.1	.6	.1
Cement, hydraulic	1.5	.1	.4	.3	.4	.1	.7	.1
Structural clay products	.7	.1	-	-	.4	.1	.3	.1
Pottery and related products	1.3	.1	.1	(1)	.6	.1	.6	.1
Concrete, gypsum, and plaster products	3.2	.2	.3	.2	1.3	.2	1.5	.3
Cut stone and stone products	.3	(1)	-	-	-	-	.3	(1)
Miscellaneous nonmetallic mineral products	6.8	.5	.7	.5	3.2	.5	2.9	.5
Primary metals	49.1	3.7	4.8	3.4	21.9	3.6	22.3	3.8
Blast furnaces and basic steel products	21.9	1.6	2.4	1.7	9.5	1.6	9.9	1.7
Iron and steel foundries	7.5	.6	.4	.3	3.6	.6	3.5	.6
Primary nonferrous metals	4.0	.3	.6	.4	1.6	.3	1.9	.3
Secondary nonferrous metals	1.2	.1	.3	.2	.4	.1	.4	.1
Nonferrous rolling and drawing	11.3	.8	1.0	.7	5.1	.8	5.1	.9
Nonferrous foundries (castings)	2.2	.2	-	-	1.1	.2	1.0	.2
Miscellaneous primary metal products	1.1	.1	.1	.1	.5	.1	.5	.1
Fabricated metal products	64.0	4.8	2.9	2.1	27.4	4.5	33.7	5.7
Metal cans and shipping containers	1.9	.1	.1	.1	1.0	.2	.8	.1
Cutlery, handtools, and hardware	5.1	.4	.4	.3	2.8	.5	1.9	.3
Heating equipment and plumbing fixtures	2.7	.2	.1	.1	1.3	.2	1.3	.2
Fabricated structural metal products	26.6	2.0	.5	.4	9.3	1.5	16.8	2.8

See footnotes at end of table.

TABLE C-1. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN MANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1980--con.

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Screw machine products, and bolts, nuts and washers	2.6	0.2	0.1	0.1	1.4	0.2	1.1	0.2
Metal forgings and stampings	6.1	.5	.3	.3	3.3	.5	2.5	.4
Coating, engraving, and allied services	1.4	.1	.3	.2	.6	.1	.4	.1
Ordnance and accessories, n.e.c.	5.5	.4	.4	.3	2.5	.4	2.7	.4
Miscellaneous fabricated metal products	11.9	.9	.5	.3	5.3	.9	6.2	1.0
Machinery, except electrical	271.5	20.3	12.3	8.8	124.6	20.6	134.6	22.7
Engines and turbines	15.7	1.2	.9	.6	8.9	1.5	5.9	1.0
Farm and garden machinery and equipment	10.4	.8	.7	.5	5.2	.9	4.6	.8
Construction and related machinery and equipment	31.8	2.4	1.5	1.1	14.4	2.4	15.8	2.7
Metalworking machinery and equipment	23.7	1.8	.7	.5	11.4	1.9	11.6	2.0
Special industry machinery except metalworking	21.6	1.6	.5	.4	9.9	1.6	11.2	1.9
General industrial machinery and equipment	26.3	2.0	.8	.6	13.1	2.2	12.4	2.1
Office, computing, and accounting machines	120.4	9.0	6.6	4.7	51.4	8.5	62.4	10.5
Refrigeration and service industry machinery	12.4	.9	.5	.4	5.4	.9	6.5	1.1
Miscellaneous machinery, except electrical	9.2	.7	.1	.1	4.9	.8	4.1	.7
Electrical machinery	298.6	22.3	15.8	11.3	153.1	25.3	129.7	21.9
Electrical transmission and distribution equipment	10.1	.8	.3	.2	4.9	.8	4.9	.8
Electrical industrial apparatus	24.2	1.8	1.1	.8	11.7	1.9	11.3	1.9
Household appliances	7.6	.6	.6	.4	4.2	.7	2.9	.5
Electric lighting and wiring equipment	11.6	.9	.6	.5	6.2	1.0	4.7	.8
Radio and television receiving equipment	9.3	.7	.3	.2	4.4	.7	4.5	.8
Communications equipment	137.2	10.3	8.5	6.1	75.1	12.4	53.6	9.0
Electronic components and accessories	85.8	6.4	3.7	2.7	40.4	6.7	41.7	7.0
Miscellaneous electrical equipment and supplies	12.9	1.0	.6	.4	6.2	1.0	6.1	1.0
Transportation equipment	220.4	16.5	16.4	11.8	131.8	21.8	72.1	12.1
Motor vehicles and equipment	43.4	3.2	3.4	2.4	24.8	4.1	15.1	2.6
Aircraft and parts	120.1	9.0	10.4	7.5	71.3	11.8	38.4	6.5
Ship and boat building and repair	10.2	.8	.4	.3	4.7	.8	5.1	.9
Railroad equipment	3.1	.2	.1	.1	1.7	.3	1.4	.2
Motorbicycles, bicycles, and parts	.6	(1)	(1)	(1)	.3	(1)	.3	(1)
Guided missiles and space vehicles and parts	41.9	3.1	2.1	1.5	28.5	4.7	11.3	1.9
Miscellaneous transportation equipment	1.0	.1	(1)	(1)	.5	.1	.5	.1
Instruments	97.7	7.3	5.3	3.8	40.3	6.7	52.1	8.8
Engineering and scientific instruments	16.7	1.2	.8	.5	8.4	1.4	7.6	1.3
Measuring and controlling instruments	40.0	3.0	1.7	1.2	18.7	3.1	19.6	3.3
Optical instruments and lenses	8.1	.6	.3	.2	3.7	.6	4.1	.7
Medical and dental instruments and supplies	12.9	1.0	1.3	1.0	3.2	.5	8.3	1.4
Opthalmic goods	1.0	.1	-	-	.4	.1	.7	.1

See footnotes at end of table.

TABLE C-1. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN MANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1980--con.

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Photographic equipment and supplies	18.4	1.4	1.2	0.9	5.7	0.9	11.5	1.9
Watches, clocks, and parts	.6	(1)	-	-	.3	(1)	.3	(1)
Miscellaneous manufacturing	10.2	.8	.7	.5	3.2	.5	6.3	1.1
Jewelry, silverware, and plated ware	.5	(1)	.1	.1	.2	(1)	.3	.1
Musical instruments	1.1	.1	-	-	.3	(1)	.8	.1
Toys and sporting goods	3.0	.2	.2	.2	1.2	.2	1.6	.3
Pens, pencils, and office and art supplies	.9	.1	.1	.1	.3	.1	.4	.1
Costume jewelry and notions	.7	.1	-	-	.2	(1)	.4	.1
Miscellaneous manufactures	3.9	.3	.3	.2	1.0	.2	2.7	.4
NONDURABLE GOODS	292.7	21.9	77.9	55.9	90.2	14.9	124.6	21.0
Food and food products	31.6	2.4	10.6	7.6	9.0	1.5	12.0	2.0
Meat products	3.8	.3	.9	.7	1.5	.3	1.4	.2
Dairy products	4.7	.3	2.0	1.4	1.2	.2	1.5	.3
Preserved fruits and vegetables	4.3	.3	1.4	1.0	1.0	.2	2.0	.3
Grain mill products	4.2	.3	1.5	1.1	1.0	.2	1.7	.3
Bakery products	2.2	.2	.4	.3	1.2	.2	.6	.1
Sugar and confectionery products	3.3	.2	1.0	.7	.9	.1	1.4	.2
Fats and oils	1.1	.1	.4	.3	.3	.1	.3	.1
Beverages	4.7	.3	1.8	1.3	1.1	.2	1.8	.3
Miscellaneous food and kindred products	3.3	.2	1.1	.8	.8	.1	1.3	.2
Tobacco products	1.9	.1	.4	.3	.3	(1)	1.2	.2
Cigarettes	1.7	.1	.4	.3	.3	(1)	1.1	.2
Cigars	(1)	(1)	-	-	-	-	(1)	(1)
Tobacco (chewing and smoking)	(1)	(1)	-	-	-	-	(1)	(1)
Tobacco stemming and redrying	.1	(1)	-	-	-	-	.1	(1)
Textiles	13.6	1.0	1.8	1.3	4.0	.7	7.7	1.3
Weaving mills, cotton	2.6	.2	.3	.3	.9	.1	1.4	.2
Weaving mills, manmade fibers	2.1	.2	.4	.3	.7	.1	1.0	.2
Weaving and finishing mills, wool	.3	(1)	-	-	.1	(1)	.2	(1)
Narrow fabric mills	.2	(1)	-	-	.1	(1)	.1	(1)
Knitting mills	1.8	.1	.3	.2	.5	.1	1.0	.2
Textile finishing, except wool and knit goods	2.4	.2	.3	.2	.3	(1)	1.8	.3
Floor covering mills	.8	.1	.1	.1	.2	(1)	.5	.1
Yarn and thread mills	1.4	.1	.1	.1	.4	.1	.8	.1
Miscellaneous textile goods	1.9	.1	.3	.2	.6	.1	1.0	.2
Apparel	5.3	.4	.5	.4	2.5	.4	2.3	.4
Men's and boys' suits and coats	.4	(1)	.1	(1)	.2	(1)	.2	(1)
Men's and boys' furnishings	1.6	.1	.2	.1	.9	.1	.6	.1

See footnotes at end of table.

TABLE C-1. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN MANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1980--con.

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Women's and misses' outerwear	1.0	0.1	0.1	0.1	0.4	0.1	0.5	0.1
Women's and children's ungergarments	.5	(1)	-	-	.2	(1)	.3	(1)
Hats, caps, and millinery	(1)	(1)	-	-	-	-	(1)	(1)
Children's outerwear	.2	(1)	-	-	.1	(1)	.1	(1)
Fur goods	(1)	(1)	-	-	-	-	(1)	(1)
Miscellaneous apparel and accessories	.2	(1)	-	-	.1	(1)	.2	(1)
Miscellaneous fabricated textile products	1.3	.1	.1	.1	.7	.1	.5	.1
Paper and allied products	23.6	1.8	3.6	2.6	9.5	1.6	10.5	1.8
Pulp mills	.9	.1	.1	.1	.4	.1	.4	.1
Paper mills, except building paper mills	7.7	.6	1.3	1.0	3.4	.6	3.0	.5
Paperboard mills	2.5	.2	.4	.3	1.1	.2	1.0	.2
Converted paper and paperboard products	10.2	.8	1.6	1.2	3.5	.6	5.1	.9
Paperboard containers and boxes	2.0	.1	.1	.1	1.0	.2	.9	.1
Building paper and board mills	.3	(1)	-	-	.1	(1)	.1	(1)
Printing and publishing	17.1	1.3	2.5	1.8	1.9	.3	12.6	2.1
Newspapers	4.2	.3	.7	.5	.3	.1	3.2	.5
Periodicals	2.8	.2	.7	.5	.2	(1)	1.8	.3
Books	1.8	.1	.5	.4	.3	(1)	1.0	.2
Miscellaneous. publishing	1.6	.1	.1	.1	-	-	1.4	.2
Commercial printing	4.2	.3	.3	.2	.6	.1	3.2	.5
Manifold business forms	.7	.1	.1	.1	.2	(1)	.4	.1
Greeting card publishing	.7	.1	-	-	.2	(1)	.5	.1
Blankbooks and bookbinding	.3	(1)	-	-	.1	(1)	.1	(1)
Printing trade services	.9	.1	-	-	-	-	.9	.2
Chemicals	151.5	11.3	51.0	36.6	41.5	6.9	59.0	9.9
Industrial inorganic chemicals	24.5	1.8	6.0	4.3	9.1	1.5	9.4	1.6
Plastic and synthetic materials and manmade fibers	25.7	1.9	5.1	3.6	9.9	1.6	10.8	1.8
Drugs	38.1	2.8	18.5	13.2	4.2	.7	15.4	2.6
Soap, detergents, cosmetics, and toilet goods	9.7	.7	4.7	3.4	1.9	.3	3.1	.5
Paints and allied products	6.4	.5	3.5	2.5	.6	.1	2.3	.4
Industrial organic chemicals	32.6	2.4	8.1	5.8	11.8	2.0	12.7	2.1
Agricultural chemicals	5.5	.4	1.5	1.1	2.0	.3	2.1	.4
Miscellaneous chemical products	8.9	.7	3.6	2.6	2.1	.3	3.2	.5
Refined petroleum products	18.7	1.4	3.2	2.3	9.2	1.5	6.3	1.1
Petroleum refining	17.2	1.3	2.8	2.0	8.7	1.4	5.7	1.0
Paving and roofing materials	.6	(1)	.1	.1	.2	(1)	.3	(1)
Miscellaneous petroleum and coal products	.9	.1	.3	.2	.2	(1)	.3	.1
Rubber and plastic products	28.2	2.1	4.2	3.0	11.8	1.9	12.2	2.1

See footnotes at end of table.

TABLE C-1. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN MANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1980--con.
[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Tires and inner tubes	10.9	0.8	2.3	1.6	3.8	0.6	4.8	0.8
Rubber and plastics footwear	.2	(1)	-	-	.1	(1)	.1	(1)
Reclaimed rubber	(1)	(1)	-	-	-	-	(1)	(1)
Rubber and plastic hose and belting	.9	.1	-	-	.5	.1	.4	.1
Fabricated rubber products, n.e.c	4.1	.3	.7	.5	1.6	.3	1.8	.3
Miscellaneous plastic products	12.1	.9	1.2	.9	5.8	1.0	5.0	.8
Leather products	1.4	.1	.1	.1	.6	.1	.7	.1
Leather tanning and finishing	.2	(1)	-	-	.1	(1)	.1	(1)
Boot and shoe cut stock and findings	(1)	(1)	-	-	-	-	(1)	(1)
Footwear, except rubber	.9	.1	.1	.1	.4	.1	.4	.1
Leather gloves and mittens	-	-	-	-	-	-	-	-
Luggage	.1	(1)	-	-	.1	(1)	(1)	(1)
Handbags and personal leather goods	.1	(1)	-	-	.1	(1)	(1)	(1)
Leather goods, n.e.c	(1)	(1)	-	-	-	-	(1)	(1)

- No amount available
(1) Value is less than .05 for numbers and less than .005 for percents.
NOTE: Because of rounding, components may not add to totals.
SOURCES: Bureau of Labor Statistics and the National Science Foundation.

TABLE C-2. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN MANUFACTURING INDUSTRIES, BY DETAILED OCCUPATION AND BROAD INDUSTRY GROUP OF EMPLOYMENT: 1980

[Numbers in thousands]

Industry	All fields	Scientists							Engineers					
		Total	Phys-ical	Math-emat-ical	Life	Soc-ial	Com-puter ana-lyst	Other	Total	Aero-nau-tical	Chem-ical	Civil	Elec/ Elec-tron	Me-chan-ical
Total manufacturing	1338.4	139.4	64.2	6.8	10.7	0.7	51.5	5.5	605.3	23.0	32.9	6.7	159.4	126.0
DURABLE GOODS	1045.7	61.5	17.0	4.4	.8	.7	36.4	2.3	515.1	23.0	5.9	5.4	154.1	102.0
Lumber and wood products	7.3	1.0	-	-	.8	-	.2	-	1.2	-	-	-	-	.3
Furniture and fixtures	6.6	.4	-	-	-	-	.4	-	2.6	-	-	-	-	.6
Stone, clay, and glass products	20.3	2.0	1.2	-	-	-	.8	-	8.8	-	.3	.5	.4	2.3
Primary metals	49.1	4.8	2.4	-	-	-	2.3	.1	21.9	-	.6	.8	2.5	4.9
Fabricated metal products	64.0	2.9	.9	-	-	-	1.9	(1)	27.4	-	.1	1.4	1.5	11.7
Machinery, except electrical	271.5	12.3	.9	-	-	-	11.4	.1	124.6	-	.8	1.4	34.2	36.6
Electrical machinery	298.6	15.8	3.1	1.3	-	.1	10.4	.9	153.1	-	2.1	-	82.6	18.7
Transportation equipment	220.4	16.4	6.6	3.1	-	.6	6.2	-	131.8	23.0	1.0	1.2	14.2	19.5
Instruments	97.7	5.3	1.6	-	-	-	2.5	1.1	40.3	-	.9	-	18.8	6.0
Miscellaneous manufacturing	10.2	.7	.3	-	-	-	.3	-	3.2	-	-	-	-	1.4
NONDURABLE GOODS	292.7	77.9	47.2	2.4	9.9	-	15.1	3.2	90.2	-	27.0	1.2	5.2	24.0
Food and food products	31.6	10.6	6.0	-	1.5	-	2.2	.8	9.0	-	.5	-	-	4.5
Tobacco products	1.9	.4	.2	-	-	-	.1	-	.3	-	-	-	-	.1
Textiles	13.6	1.8	.7	-	-	-	1.1	-	4.0	-	-	-	-	1.1
Apparel	5.3	.5	-	-	-	-	.5	-	2.5	-	-	-	-	.2
Paper and allied products	23.6	3.6	2.0	-	-	-	.9	.6	9.5	-	1.8	-	.9	2.8
Printing and publishing	17.1	2.5	.3	.3	-	-	1.9	-	1.9	-	-	-	.2	.4
Chemicals	151.5	51.0	32.9	2.0	8.4	-	5.9	1.7	41.5	-	19.0	.8	3.0	8.6
Refined petroleum products	18.7	3.2	2.5	-	-	-	.7	.1	9.2	-	3.7	.4	.4	2.3
Rubber and plastic products	28.2	4.2	2.6	.1	-	-	1.5	-	11.3	-	1.9	-	.7	3.8
Leather products	1.4	.1	-	-	-	-	.1	-	.6	-	-	-	-	.1

See footnotes at end of table.

TABLE C-2. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN MANUFACTURING INDUSTRIES, BY DETAILED OCCUPATION AND BROAD INDUSTRY GROUP OF EMPLOYMENT: 1980--con.

[Numbers in thousands]

Industry	Engineers		Technicians						
	Industrial	Other	Total	Programmer	Drafter	Engineering	Science	Unspecified	Other
Total manufacturing..............	122.8	134.6	593.6	81.0	119.3	259.5	133.1	0.7	-
DURABLE GOODS....................	106.6	118.0	469.0	65.9	106.0	237.1	60.1	(1)	-
Lumber and wood products........	.4	.5	5.1	.3	1.6	.2	2.9	(1)	-
Furniture and fixtures.........	1.4	.6	3.6	.7	2.0	.4	.4	-	-
Stone, clay, and glass products	2.2	3.1	9.6	.7	2.7	2.8	3.3	-	-
Primary metals.................	4.7	8.5	22.3	2.2	3.6	9.7	6.7	-	-
Fabricated metal products.......	8.4	4.4	33.7	3.7	18.8	7.3	3.8	-	-
Machinery, except electrical...	32.3	19.2	134.6	32.8	35.8	58.2	7.8	-	-
Electrical machinery...........	28.3	21.5	129.7	14.1	19.8	86.4	9.5	-	-
Transportation equipment.......	21.7	51.0	72.1	7.2	12.8	40.7	11.4	-	-
Instruments....................	5.9	8.7	52.1	3.4	7.2	28.9	12.7	-	-
Miscellaneous manufacturing....	1.3	.5	6.3	.7	1.6	2.4	1.5	-	-
NONDURABLE GOODS.................	16.2	16.6	124.6	15.1	13.3	22.4	73.0	.7	-
Food and food products.........	2.5	1.4	12.0	2.1	.9	1.3	7.7	-	-
Tobacco products...............	.1	.1	1.2	-	.1	.2	.8	.2	-
Textiles.......................	2.0	.9	7.7	.9	-	1.0	5.8	-	-
Apparel........................	2.0	.2	2.3	.9	-	.7	.5	.1	-
Paper and allied products......	1.4	2.6	10.5	1.0	1.0	1.5	6.8	.1	-
Printing and publishing........	.7	.6	12.6	4.2	5.4	1.8	1.2	-	-
Chemicals......................	4.0	6.0	59.0	4.1	3.5	10.0	41.5	-	-
Refined petroleum products.....	.5	1.9	6.3	.3	.7	2.1	3.1	-	-
Rubber and plastic products....	2.5	2.7	12.2	1.3	1.7	3.6	5.4	.1	-
Leather products...............	.3	.1	.7	.2	-	.2	.2	.1	-

- No amount available
(1) Value is less than .05.
NOTE: Because of rounding, components may not add to totals.
SOURCES: Bureau of Labor Statistics and the National Science Foundation.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980

Meat products (SIC 2010)

Field	Total	Percent of industry employment	Relative error
Total	3,850	1.01	(1)
Engineers	1,530	.41	(1)
Industrial	620	.17	7.30
Mechanical	740	.20	6.64
Other, n.e.c	170	.04	(1)
Scientists	920	.24	(1)
Chemists	450	.12	8.77
Biological scientists	170	.04	11.07
All other natural and mathematical scientists	80	.02	(1)
Systems analysts	220	.06	10.73
Technicians	1,400	.36	(1)
Computer programmer	360	.09	8.41
Drafter	80	.02	15.73
All other engineering technicians	190	.05	(1)
Biological science technicians	390	.10	12.19
All other science technicians	120	.03	(1)
All other technicians	260	.07	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Dairy products (SIC 2020)

Field	Total	Percent of industry employment	Relative error
Total	4,660	2.52	(1)
Engineers	1,210	.65	(1)
Chemical	120	.06	27.22
Industrial	320	.17	14.00
Mechanical	620	.34	6.97
Other, n.e.c.	150	.08	(1)
Scientists	1,960	1.07	(1)
Chemists	1,150	.64	22.64
Biological scientists	460	.25	11.85
All other natural and mathematical scientists	120	.06	(1)
Systems analysts	230	.12	17.10
Technicians	1,490	.80	(1)
Computer programmer	280	.15	13.03
Drafter	100	.05	28.33
All other engineering technicians	180	.10	(1)
Biological science technicians	390	.21	16.56
All other science technicians	260	.14	(1)
All other technicians	280	.15	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Preserved fruits and vegetables (SIC 2030)

Field	Total	Percent of industry employment	Relative error
Total	4,340	1.79	(1)
Engineers	980	.40	(1)
Industrial	360	.15	7.96
Mechanical	480	.20	7.19
Other, n.e.c.	140	.05	(1)
Scientists	1,400	.59	(1)
Chemists	590	.25	10.06
Biological scientists	240	.10	13.45
All other natural and mathematical scientists	260	.11	(1)
Systems analysts	310	.13	13.80
Technicians	1,960	.80	(1)
Computer programmer	330	.14	11.49
Drafter	150	.06	10.73
All other engineering technicians	130	.05	(1)
Biological science technicians	540	.22	12.88
All other science technicians	340	.14	(1)
All other technicians	470	.19	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Grain mill products (SIC 2040)

Field	Total	Percent of industry employment	Relative error
Total	4,170	2.84	(1)
Engineers	970	.66	(1)
Chemical	130	.09	14.76
Industrial	260	.18	8.36
Mechanical	410	.28	9.82
Other, n.e.c	170	.11	(1)
Scientists	1,500	1.02	(1)
Chemists	910	.63	7.89
Biological scientists	120	.08	17.56
All other natural and mathematical scientists	200	.13	(1)
Systems analysts	270	.18	16.31
Technicians	1,700	1.16	(1)
Computer programmer	180	.12	13.09
Drafter	150	.10	11.78
All other engineering technicians	130	.09	(1)
Biological science technicians	450	.31	17.92
All other science technicians	440	.30	(1)
All other technicians	350	.24	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Bakery products (SIC 2050)

Field	Total	Percent of industry employment	Relative error
Total	2,230	0.94	(1)
Engineers	1,160	.49	(1)
Industrial	240	.10	11.45
Mechanical	790	.34	6.67
Other, n.e.c	130	.05	(1)
Scientists	440	.19	(1)
Chemists	230	.10	28.23
Systems analysts	210	.09	23.20
Technicians	630	.26	(1)
Computer programmer	150	.06	15.75
Drafter	80	.03	27.67
All other engineering technicians	160	.07	(1)
Science technicians	140	.06	(1)
All other technicians	100	.04	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Sugar and confectionery products (SIC 2060)

Field	Total	Percent of industry em-ployment	Relative error
Total	3,260	3.26	(1)
Engineers	860	.86	(1)
Chemical	80	.08	15.46
Industrial	150	.15	10.53
Mechanical	470	.47	7.98
Other, n.e.c	160	.16	(1)
Scientists	1,020	1.02	(1)
Chemists	600	.60	7.64
Biological scientists	90	.09	23.06
All other natural and mathematical scientists	110	.11	(1)
Systems analysts	220	.22	17.89
Technicians	1,380	1.38	(1)
Computer programmer	190	.19	13.17
Drafter	200	.20	12.97
All other engineering technicians	150	.15	(1)
Biological science technicians	280	.28	18.31
All other science technicians	280	.28	(1)
All other technicians	280	.28	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Fats and oils (SIC 2070)

Field	Total	Percent of industry employment	Relative error
Total	1,120	2.51	(1)
Engineers	330	.73	(1)
Chemical	60	.13	21.07
Industrial	80	.18	17.19
Mechanical	130	.29	21.69
Other, n.e.c	60	.13	(1)
Scientists	440	1.00	(1)
Chemists	440	1.00	10.39
Technicians	350	.78	(1)
Computer programmer	90	.20	26.80
Engineering technicians	80	.18	(1)
Science technicians	110	.25	(1)
All other technicians	70	.15	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Beverages (SIC 2080)

Field	Total	Percent of industry employment	Relative error
Total	4,660	1.89	(1)
Engineers	1,090	.44	(1)
Industrial	250	.10	10.36
Mechanical	530	.22	23.93
Other, n.e.c	310	.12	(1)
Scientists	1,760	.72	(1)
Chemists	1,090	.45	7.65
Biological scientists	240	.10	16.19
All other natural and mathematical scientists	50	.02	(1)
Systems analysts	380	.15	12.57
Technicians	1,810	.73	(1)
Computer programmer	310	.12	10.09
Drafter	100	.04	14.73
All other engineering technicians	120	.05	(1)
Biological science technicians	490	.20	17.56
All other science technicians	420	.17	(1)
All other technicians	370	.15	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous food and kindred products (SIC 2090)

Field	Total	Percent of industry employment	Relative error
Total	3,270	1.92	(1)
Engineers	840	.49	(1)
Chemical	120	.07	33.09
Industrial	220	.13	17.32
Mechanical	340	.20	9.65
Other, n.e.c	160	.09	(1)
Scientists	1,120	.66	(1)
Chemists	580	.34	12.66
Biological scientists	140	.08	20.74
Systems analysts	400	.24	46.96
Technicians	1,310	.77	(1)
Computer programmer	220	.13	13.21
Engineering technicians	200	.12	(1)
Biological science technicians	190	.11	33.92
All other science technicians	420	.25	(1)
All other technicians	280	.16	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Cigarettes (SIC 2110)

Field	Total	Percent of industry employment	Relative error
Total	1,720	3.73	(1)
Engineers	280	.60	(1)
Industrial	80	.17	21.36
Mechanical	140	.30	19.84
Other, n.e.c	60	.13	(1)
Scientists	370	.80	(1)
Chemists	230	.50	23.53
Systems analysts	140	.30	21.58
Technicians	1,070	2.33	(1)
Drafter	110	.24	20.33
Electrical/electronic technicians	190	.41	21.74
All other technicians	770	1.68	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Cigars (SIC 2120)

Field	Total	Percent of industry employment	Relative error
Total	40	0.53	(1)
Technicians	40	.53	(1)
Field unspecified	40	.53	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Tobacco (chewing and smoking) (SIC 2130)

Field	Total	Percent of industry employment	Relative error
Total	30	0.65	(1)
Technicians	30	.65	(1)
Field unspecified	30	.65	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Tobacco stemming and redrying (SIC 2140)

Field	Total	Percent of industry employment	Relative error
Total	90	1.55	(1)
Technicians	90	1.55	(1)
Field unspecified	90	1.55	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Weaving mills, cotton (SIC 2210)

Field	Total	Percent of industry employment	Relative error
Total	2,610	1.68	(1)
Engineers	900	.58	(1)
Industrial	520	.34	7.04
Mechanical	160	.10	8.03
Other, n.e.c.	220	.14	(1)
Scientists	350	.22	(1)
Chemists	70	.04	16.57
Systems analysts	280	.18	15.89
Technicians	1,360	.88	(1)
Computer programmer	250	.16	16.00
Engineering technicians	280	.18	11.09
Science technicians	540	.35	(1)
All other technicians	290	.19	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Weaving mills, manmade fibers (SIC 2220)

Field	Total	Percent of industry employment	Relative error
Total	2,140	1.72	(1)
Engineers	750	.60	(1)
Industrial	440	.36	6.50
Mechanical	190	.15	11.68
Other, n.e.c	120	.09	(1)
Scientists	410	.33	(1)
Chemists	70	.05	14.32
Systems analysts	340	.28	24.92
Technicians	980	.79	(1)
Computer programmer	110	.09	20.43
Engineering technicians	140	.11	10.11
Science technicians	410	.33	(1)
All other technicians	320	.26	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Weaving and finishing mills, wool (SIC 2230)

Field	Total	Percent of industry employment	Relative error
Total	350	1.69	(1)
Engineers	150	.73	(1)
Field unspecified	150	.73	(1)
Technicians	200	.96	(1)
Engineering technicians	60	.29	37.19
Science technicians	120	.58	(1)
All other technicians	20	.09	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Narrow fabric mills (SIC 2240)

Field	Total	Percent of industry employment	Relative error
Total	240	1.00	(1)
Engineers	100	.42	(1)
Field unspecified	100	.42	(1)
Technicians	140	.58	(1)
Science technicians	70	.29	(1)
All other technicians	70	.29	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Knitting mills (SIC 2250)

Field	Total	Percent of industry employment	Relative error
Total	1,790	0.77	(1)
Engineers	530	.23	(1)
Industrial	370	.16	7.48
Mechanical	160	.07	11.32
Scientists	270	.12	(1)
Chemists	90	.04	12.63
Systems analysts	180	.08	11.72
Technicians	990	.42	(1)
Computer programmer	220	.09	9.57
Engineering technicians	160	.07	17.02
Colorist	270	.12	11.11
All other science technicians	230	.10	(1)
All other technicians	110	.04	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Textile finishing, except wool and knit goods (SIC 2260)

Field	Total	Percent of industry employment	Relative error
Total	2,380	3.06	(1)
Engineers	300	.38	(1)
Industrial	140	.18	8.55
Mechanical	100	.13	9.08
Other, n.e.c	60	.07	(1)
Scientists	280	.36	(1)
Chemists	200	.26	9.01
Systems analysts	80	.10	29.59
Technicians	1,800	2.32	(1)
Computer programmer	60	.07	16.82
Engineering technicians	60	.07	18.53
Colorist	860	1.12	7.75
All other science technicians	560	.73	(1)
All other technicians	260	.33	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Floor covering mills (SIC 2270)

Field	Total	Percent of industry employment	Relative error
Total	760	1.33	(1)
Engineers	210	.37	(1)
Industrial	140	.25	13.27
Mechanical	70	.12	18.29
Scientists	70	.12	(1)
Systems analysts	70	.12	20.52
Technicians	480	.84	(1)
Computer programmer	110	.19	14.32
Colorist	140	.25	18.76
All other science technicians	80	.14	(1)
All other technicians	150	.26	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Yarn and thread mills (SIC 2280)

Field	Total	Percent of industry employment	Relative error
Total	1,370	1.02	(1)
Engineers	430	.32	(1)
Industrial	270	.20	5.91
Mechanical	160	.12	11.94
Scientists	150	.11	(1)
Chemists	80	.06	16.27
Systems analysts	70	.05	18.64
Technicians	790	.59	(1)
Computer programmer	90	.06	18.33
Engineering technicians	170	.13	9.52
Colorist	80	.06	15.65
All other science technicians	350	.27	(1)
All other technicians	100	.07	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous textile goods (SIC 2290)

Field	Total	Percent of industry employment	Relative error
Total	1,930	2.79	(1)
Engineers	640	.92	(1)
Industrial	160	.23	9.39
Mechanical	270	.39	11.64
Other, n.e.c	210	.30	(1)
Scientists	300	.43	(1)
Chemists	210	.30	16.93
Systems analysts	90	.13	19.24
Technicians	990	1.44	(1)
Computer programmer	90	.13	15.59
Engineering technicians	120	.17	17.51
Colorist	140	.20	12.77
All other science technicians	510	.75	(1)
All other technicians	130	.19	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Men's and boys' suits and coats (SIC 2310)

Field	Total	Percent of industry employment	Relative error
Total	420	0.51	(1)
Engineers	170	.21	(1)
Industrial	170	.21	12.19
Scientists	60	.07	(1)
Systems analysts	60	.07	22.52
Technicians	190	.23	(1)
Computer programmer	160	.20	26.99
All other technicians	30	.03	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Men's and boys' furnishings (SIC 2320)

Field	Total	Percent of industry employment	Relative error
Total	1,650	0.42	(1)
Engineers	900	.23	(1)
Industrial	800	.21	4.09
Mechanical	100	.02	18.14
Scientists	190	.05	(1)
Systems analysts	190	.05	14.51
Technicians	560	.14	(1)
Computer programmer	260	.07	11.37
Engineering technicians	180	.04	15.17
All other technicians	120	.03	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Women's and misses' outerwear (SIC 2330)

Field	Total	Percent of industry employment	Relative error
Total	990	0.21	(1)
Engineers	390	.09	(1)
Industrial	390	.09	7.82
Scientists	140	.03	(1)
Systems analysts	140	.03	33.18
Technicians	460	.09	(1)
Computer programmer	260	.06	13.82
Engineering technicians	160	.03	19.70
All other technicians	40	(1)	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Women's and children's ungergarments (SIC 2340)

Field	Total	Percent of industry employment	Relative error
Total	460	0.56	(1)
Engineers	200	.22	(1)
Industrial	200	.22	7.41
Technicians	260	.28	(1)
Computer programmer	90	.10	9.80
Engineering technicians	90	.10	16.43
All other technicians	80	.08	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Hats, caps, and millinery (SIC 2350)

Field	Total	Percent of industry employment	Relative error
Total	20	0.10	(1)
Technicians	20	.10	(1)
Field unspecified	20	.10	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Children's outerwear (SIC 2360)

Field	Total	Percent of industry employment	Relative error
Total	180	0.27	(1)
Engineers	80	.12	(1)
Industrial	80	.12	7.76
Technicians	100	.15	(1)
Field unspecified	100	.15	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Fur goods (SIC 2370)

Field	Total	Percent of industry employment	Relative error
Total	10	0.27	(1)
Technicians	10	.27	(1)
Field unspecified	10	.27	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous apparel and accessories (SIC 2380)

Field	Total	Percent of industry em-ployment	Relative error
Total	230	0.40	(1)
Engineers	70	.12	(1)
Industrial	70	.12	11.09
Technicians	160	.28	(1)
Computer programmer	60	.10	15.65
All other technicians	100	.18	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous fabricated textile products (SIC 2390)

Field	Total	Percent of industry employment	Relative error
Total	1,330	0.75	(1)
Engineers	690	.39	(1)
Industrial	320	.18	7.41
Mechanical	140	.08	15.66
Other, n.e.c	230	.13	(1)
Scientists	130	.07	(1)
Systems analysts	130	.07	19.03
Technicians	510	.29	(1)
Computer programmer	120	.07	12.86
Engineering technicians	260	.15	15.91
Science technicians	70	.04	34.90
All other technicians	60	.03	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Logging camps and contractors (SIC 2410)

Field	Total	Percent of industry em-ploy-ment	Relative error
Total	1,520	1.88	(1)
Engineers	80	.10	(1)
Field unspecified	80	.10	(1)
Scientists	120	.15	(1)
Agricultural scientists	120	.15	12.36
Technicians	1,320	1.63	(1)
Drafter	70	.08	32.61
All other engineering technicians	60	.07	(1)
Timber cruiser	950	1.18	12.68
All other technicians	240	.30	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Sawmills and planing mills (SIC 2420)

Field	Total	Percent of industry employment	Relative error
Total	1,750	0.81	(1)
Engineers	290	.13	(1)
Industrial	70	.03	12.71
Mechanical	110	.05	12.58
Other, n.e.c	110	.05	(1)
Scientists	550	.26	(1)
Agricultural scientists	550	.26	9.87
Technicians	910	.42	(1)
Drafter	80	.03	20.37
Timber cruiser	580	.28	8.48
All other science technicians	60	.02	(1)
All other technicians	190	.09	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Millwork, plywood, structural wood (SIC 2430)

Field	Total	Percent of industry employment	Relative error
Total	2,270	1.15	(1)
Engineers	440	.21	(1)
Industrial	200	.10	12.15
Mechanical	130	.06	10.14
Other, n.e.c	110	.05	(1)
Scientists	290	.15	(1)
Agricultural scientists	120	.06	17.36
Systems analysts	170	.09	16.12
Technicians	1,540	.79	(1)
Computer programmer	250	.13	13.25
Drafter	750	.39	7.30
All other engineering technicians	90	.04	(1)
Timber cruiser	220	.11	16.18
All other science technicians	60	.03	(1)
All other technicians	170	.09	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Wood containers (SIC 2440)

Field	Total	Percent of industry employment	Relative error
Total	50	0.11	(1)
Technicians	50	.11	(1)
Field unspecified	50	.11	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Wood buildings and mobile homes (SIC 2450)

Field	Total	Percent of industry employment	Relative error
Total	1,060	1.73	(1)
Engineers	180	.29	(1)
Industrial	70	.11	11.94
Other, n.e.c	110	.18	(1)
Technicians	880	1.44	(1)
Drafter	660	1.09	6.07
All other engineering technicians	60	.09	(1)
All other technicians	160	.26	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous wood products (SIC 2490)

Field	Total	Percent of industry employment	Relative error
Total	630	0.77	(1)
Engineers	250	.30	(1)
Industrial	90	.11	10.01
Mechanical	70	.08	9.73
Other, n.e.c	90	.11	(1)
Technicians	380	.47	(1)
Drafter	90	.11	19.12
Science technicians	90	.11	(1)
All other technicians	200	.25	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Household furniture (SIC 2510)

Field	Total	Percent of industry employment	Relative error
Total	2,370	0.77	(1)
Engineers	1,060	.35	(1)
Industrial	720	.24	6.43
Mechanical	180	.06	11.61
Other, n.e.c.	160	.05	(1)
Scientists	200	.06	(1)
Systems analysts	200	.06	14.06
Technicians	1,110	.36	(1)
Computer programmer	400	.13	10.17
Drafter	370	.12	8.93
All other engineering technicians	190	.06	(1)
All other technicians	150	.05	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Office furniture (SIC 2520)

Field	Total	Percent of industry employment	Relative error
Total	1,570	3.15	(1)
Engineers	710	1.43	(1)
Industrial	380	.77	14.26
Mechanical	170	.34	23.59
Other, n.e.c	160	.32	(1)
Scientists	180	.36	(1)
Systems analysts	180	.36	24.95
Technicians	680	1.36	(1)
Computer programmer	220	.44	22.69
Drafter	260	.52	15.86
All other engineering technicians	180	.36	(1)
All other technicians	20	.04	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Public building and related furniture (SIC 2530)

Field	Total	Percent of industry employment	Relative error
Total	600	2.49	(1)
Engineers	240	.99	(1)
Industrial	90	.37	7.57
Mechanical	70	.29	9.88
Other, n.e.c	80	.33	(1)
Technicians	360	1.50	(1)
Drafter	250	1.04	8.60
All other technicians	110	.46	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Partitions and office and store fixtures (SIC 2540)

Field	Total	Percent of industry employment	Relative error
Total	1,410	2.18	(1)
Engineers	320	.49	(1)
Industrial	110	.17	9.50
Mechanical	90	.14	10.42
Other, n.e.c.	120	.18	(1)
Technicians	1,090	1.69	(1)
Computer programmer	60	.09	9.69
Drafter	900	1.41	7.60
All other engineering technicians	80	.12	(1)
All other technicians	50	.07	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous furniture and fixtures (SIC 2590)

Field	Total	Percent of industry employment	Relative error
Total	630	2.37	(1)
Engineers	270	1.01	(1)
Industrial	90	.34	16.22
Mechanical	120	.45	16.75
Other, n.e.c	60	.22	(1)
Technicians	360	1.36	(1)
Computer programmer	70	.26	26.54
Drafter	220	.84	11.16
All other technicians	70	.26	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Pulp mills (SIC 2610)

Field	Total	Percent of industry employment	Relative error
Total	870	5.23	(1)
Engineers	360	2.16	(1)
Chemical	150	.90	11.74
Mechanical	110	.66	10.04
Other, n.e.c	100	.60	(1)
Scientists	140	.84	(1)
Chemists	140	.84	28.75
Technicians	370	2.23	(1)
Engineering technicians	70	.42	(1)
Science technicians	120	.72	31.25
All other technicians	180	1.09	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Paper mills, except building paper mills (SIC 2620)

Field	Total	Percent of industry employment	Relative error
Total	7,670	4.32	(1)
Engineers	3,370	1.91	(1)
Chemical	970	.55	9.48
Electrical/electronic	420	.24	7.95
Industrial	340	.19	8.61
Mechanical	1,220	.69	8.49
Other, n.e.c	420	.24	(1)
Scientists	1,340	.75	(1)
Chemists	680	.38	11.66
All other natural and mathematical scientists	280	.16	(1)
Systems analysts	380	.21	11.58
Technicians	2,960	1.66	(1)
Computer programmer	310	.17	9.12
Drafter	380	.21	13.11
All other engineering technicians	450	.25	(1)
Science technicians	780	.44	16.22
All other technicians	1,040	.59	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Paperboard mills SIC 2630)

Field	Total	Percent of industry employment	Relative error
Total	2,520	3.77	(1)
Engineers	1,140	1.71	(1)
Chemical	290	.44	8.75
Electrical/electronic	130	.19	7.65
Industrial	170	.25	10.52
Mechanical	360	.54	10.36
Other, n.e.c	190	.29	(1)
Scientists	360	.53	(1)
Chemists	220	.33	11.08
All other natural and mathematical scientists	50	.07	(1)
Systems analysts	90	.13	13.35
Technicians	1,020	1.53	(1)
Computer programmer	110	.16	9.88
Drafter	130	.19	10.98
All other engineering technicians	170	.25	(1)
Science technicians	230	.35	23.77
All other technicians	380	.58	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Converted paper and paperboard products (SIC 2640)

Field	Total	Percent of industry employment	Relative error
Total	10,240	4.53	(1)
Engineers	3,500	1.55	(1)
Chemical	380	.17	14.55
Electrical/electronic	270	.12	18.33
Industrial	490	.21	6.70
Mechanical	790	.35	9.34
Other, n.e.c.	1,570	.70	(1)
Scientists	1,610	.71	(1)
Chemists	980	.43	25.23
All other natural and mathematical scientists	290	.13	(1)
Systems analysts	340	.15	16.93
Technicians	5,130	2.27	(1)
Computer programmer	330	.14	9.68
Drafter	390	.17	21.29
All other engineering technicians	640	.28	(1)
Science technicians	1,430	.64	37.38
All other technicians	2,340	1.04	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Paperboard containers and boxes (SIC 2650)

Field	Total	Percent of industry employment	Relative error
Total	2,000	0.91	(1)
Engineers	970	.44	(1)
Electrical/electronic	70	.03	15.82
Industrial	410	.19	4.76
Mechanical	290	.13	8.73
Other, n.e.c.	200	.09	(1)
Scientists	140	.06	(1)
Systems analysts	140	.06	15.06
Technicians	890	.41	(1)
Computer programmer	240	.11	13.19
Drafter	150	.07	10.17
All other engineering technicians	170	.08	(1)
All other technicians	330	.15	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Building paper and board mills (SIC 2660)

Field	Total	Percent of industry employment	Relative error
Total	270	2.41	(1)
Engineers	130	1.16	(1)
Field unspecified	130	1.16	(1)
Technicians	140	1.25	(1)
Field unspecified	140	1.25	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Newspapers (SIC 2710)

Field	Total	Percent of industry employment	Relative error
Total	4,180	0.93	(1)
Engineers	350	.06	(1)
Electrical/electronic	120	.02	21.96
Industrial	110	.02	30.18
Other, n.e.c	120	.02	(1)
Scientists	670	.15	(1)
Mathematical scientists	90	.02	(1)
Systems analysts	580	.13	6.87
Technicians	3,160	.72	(1)
Computer programmer	1,170	.27	8.07
Drafter	880	.20	13.17
Electrical/electronic technicians	870	.20	7.40
All other technicians	240	.05	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Periodicals (SIC 2720)

Field	Total	Percent of industry employment	Relative error
Total	2,770	3.14	(1)
Engineers	220	.25	(1)
Industrial	150	.17	47.56
Other, n.e.c	70	.08	(1)
Scientists	750	.85	(1)
Statistician	170	.19	19.10
Physical scientists	160	.18	(1)
Systems analysts	420	.48	14.97
Technicians	1,800	2.04	(1)
Computer programmer	530	.60	13.64
Drafter	980	1.12	16.11
Electrical/electronic technicians	120	.13	39.23
All other technicians	170	.19	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Books (SIC 2730)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	1,790	1.71	(1)
Engineers	260	.24	(1)
Industrial	190	.18	27.02
Other, n.e.c.	70	.06	(1)
Scientists	520	.50	(1)
Systems analysts	520	.50	13.85
Technicians	1,010	.97	(1)
Computer programmer	770	.75	13.92
Drafter	80	.07	35.75
All other technicians	160	.15	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous publishing (SIC 2740)

Field	Total	Percent of industry employment	Relative error
Total	1,600	3.25	(1)
Scientists	150	.30	(1)
Mathematical scientists	60	.12	(1)
Systems analysts	90	.18	14.40
Technicians	1,450	2.95	(1)
Computer programmer	290	.59	12.33
Drafter	980	2.00	15.01
Electrical/electronic technicians	70	.14	40.05
All other technicians	110	.22	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Commercial printing (SIC 2750)

Field	Total	Percent of industry employment	Relative error
Total	4,170	0.95	(1)
Engineers	610	.12	(1)
Electrical/electronic	90	.02	22.20
Industrial	200	.04	8.99
Mechanical	200	.04	14.02
Other, n.e.c	120	.02	(1)
Scientists	330	.07	(1)
Chemists	100	.02	15.31
Systems analysts	230	.05	8.72
Technicians	3,230	.76	(1)
Computer programmer	760	.18	9.23
Drafter	1,780	.42	9.21
Electrical/electronic technicians	310	.07	20.28
All other technicians	380	.09	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Manifold business forms (SIC 2760)

Field	Total	Percent of industry employment	Relative error
Total	700	1.40	(1)
Engineers	190	.38	(1)
Industrial	80	.16	13.84
Mechanical	110	.22	38.38
Scientists	100	.20	(1)
Systems analysts	100	.20	23.10
Technicians	410	.82	(1)
Computer programmer	150	.30	15.78
Drafter	130	.26	15.77
All other engineering technicians	110	.22	(1)
All other technicians	20	.04	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Greeting card publishing (SIC 2770)

Field	Total	Percent of industry employment	Relative error
Total	710	2.84	(1)
Engineers	200	.80	(1)
Field unspecified	200	.80	(1)
Technicians	510	2.04	(1)
Computer programmer	300	1.20	43.62
Engineering technicians	100	.40	(1)
All other technicians	110	.44	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Blankbooks and bookbinding (SIC 2780)

Field	Total	Percent of industry employment	Relative error
Total	260	0.40	(1)
Engineers	120	.18	(1)
Mechanical	60	.09	12.70
Other, n.e.c	60	.09	(1)
Technicians	140	.22	(1)
Computer programmer	60	.09	21.40
Engineering technicians	80	.13	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Printing trade services (SIC 2790)

Field	Total	Percent of industry employment	Relative error
Total	900	2.03	(1)
Technicians	900	2.03	(1)
Computer programmer	220	.50	13.94
Drafter	530	1.20	21.23
Electrical/electronic technicians	100	.22	13.76
All other technicians	50	.11	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Industrial inorganic chemicals (SIC 2810)

Field	Total	Percent of industry employment	Relative error
Total	24,540	14.91	(1)
Engineers	9,090	5.52	(1)
Chemical	3,710	2.26	6.89
Civil	310	.18	15.17
Electrical/electronic	840	.51	13.13
Industrial	660	.40	14.70
Mechanical	1,790	1.09	9.89
Safety	380	.23	9.75
Other, n.e.c	1,400	.85	(1)
Scientists	6,040	3.67	(1)
Mathematical scientists	400	.24	20.06
Chemists	3,900	2.38	7.85
Biological scientists	170	.10	24.04
Medical scientists	80	.04	22.88
All other natural and mathematical scientists	410	.25	(1)
Systems analysts	1,080	.66	20.10
Technicians	9,410	5.72	(1)
Computer programmer	580	.35	13.13
Drafter	980	.59	15.72
Electrical/electronic technicians	460	.28	18.21
Industrial engineering technicians	200	.12	27.16
All other engineering technicians	2,000	1.22	(1)
Physical science technicians	2,520	1.54	15.44
Biological science technicians	510	.31	36.70
All other science technicians	1,130	.69	(1)
All other technicians	1,030	.62	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Plastics and synthetic materials and manmade fibers (SIC 2820)

Field	Total	Percent of industry employment	Relative error
Total	25,700	12.37	(1)
Engineers	9,860	4.75	(1)
Chemical	4,790	2.32	8.27
Civil	290	.14	20.57
Electrical/electronic	820	.39	17.96
Industrial	770	.37	8.34
Mechanical	2,110	1.02	14.28
Safety	350	.16	6.74
Other, n.e.c	730	.35	(1)
Scientists	5,080	2.44	(1)
Mathematical scientists	280	.13	27.15
Chemists	3,640	1.76	5.20
Life scientists	70	.03	(1)
All other natural and mathematical scientists	210	.10	(1)
Systems analysts	880	.42	15.96
Technicians	10,760	5.18	(1)
Computer programmer	620	.30	20.53
Drafter	980	.47	31.17
Electrical/electronic technicians	530	.25	13.77
Industrial engineering technicians	210	.10	21.91
All other engineering technicians	1,890	.91	(1)
Physical science technicians	2,650	1.28	10.74
Biological science technicians	200	.09	29.50
All other science technicians	1,140	.55	(1)
All other technicians	2,540	1.23	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Drugs (SIC 2830)

Field	Total	Percent of industry employment	Relative error
Total	38,070	19.02	(1)
Engineers	4,220	2.10	(1)
Chemical	1,370	.68	12.08
Electrical/electronic	240	.12	14.78
Industrial	1,040	.52	15.29
Mechanical	840	.42	17.50
Safety	170	.08	8.81
Other, n.e.c	560	.28	(1)
Scientists	18,460	9.24	(1)
Mathematical scientists	780	.39	12.08
Chemists	8,170	4.10	7.02
Agricultural scientists	200	.10	30.23
Biological scientists	5,000	2.51	8.81
Medical scientists	1,690	.84	15.74
All other natural and mathematical scientists	830	.41	(1)
Systems analysts	1,790	.89	12.19
Technicians	15,390	7.68	(1)
Computer programmer	1,090	.54	10.81
Drafter	310	.15	10.74
Electrical/electronic technicians	470	.23	16.07
Industrial engineering technicians	200	.10	19.26
All other engineering technicians	530	.26	(1)
Physical science technicians	3,200	1.60	17.26
Biological science technicians	6,320	3.17	10.98
All other science technicians	1,870	.93	(1)
All other technicians	1,400	.70	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Soap, detergents, cosmetics, and toilet goods (SIC 2840)

Field	Total	Percent of industry employment	Relative error
Total	9,710	6.87	(1)
Engineers	1,880	1.32	(1)
Chemical	500	.35	9.42
Electrical/electronic	60	.04	14.90
Industrial	440	.31	9.43
Mechanical	520	.37	8.39
Safety	60	.04	10.23
Other, n.e.c.	300	.21	(1)
Scientists	4,730	3.37	(1)
Mathematical scientists	110	.07	17.78
Chemists	3,650	2.61	6.07
Biological scientists	280	.20	16.29
Systems analysts	690	.49	12.75
Technicians	3,100	2.18	(1)
Computer programmer	470	.33	9.71
Drafter	130	.09	10.51
All other engineering technicians	240	.17	(1)
Physical science technicians	1,110	.79	13.38
Biological science technicians	290	.20	14.57
All other science technicians	540	.38	(1)
All other technicians	320	.22	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Paints and allied products (SIC 2850)

Field	Total	Percent of industry employment	Relative error
Total	6,370	9.58	(1)
Engineers	590	.87	(1)
Chemical	270	.40	13.47
Industrial	60	.09	10.31
Mechanical	110	.16	11.91
Other, n.e.c	150	.22	(1)
Scientists	3,460	5.22	(1)
Chemists	3,360	5.07	3.79
Systems analysts	100	.15	9.12
Technicians	2,320	3.49	(1)
Computer programmer	140	.21	9.54
Engineering technicians	100	.15	(1)
Physical science technicians	1,700	2.56	9.21
All other science technicians	200	.30	(1)
All other technicians	180	.27	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Industrial organic chemicals (SIC 2860)

Field	Total	Percent of industry employment	Relative error
Total	32,600	18.65	(1)
Engineers	11,810	6.75	(1)
Chemical	6,250	3.59	8.40
Civil	240	.13	21.03
Electrical/electronic	830	.47	14.02
Industrial	710	.40	11.43
Mechanical	2,430	1.39	12.47
Safety	370	.21	8.44
Other, n.e.c	980	.56	(1)
Scientists	8,070	4.61	(1)
Mathematical scientists	400	.23	31.51
Chemists	5,730	3.29	10.29
Agricultural scientists	150	.08	29.32
Biological scientists	420	.24	21.04
Medical scientists	110	.06	31.34
All other natural and mathematical scientists	220	.12	(1)
Systems analysts	1,040	.59	14.15
Technicians	12,720	7.29	(1)
Computer programmer	720	.41	12.82
Drafter	770	.44	16.15
Electrical/electronic technicians	740	.42	19.37
All other engineering technicians	1,720	.99	(1)
Physical science technicians	3,490	2.00	11.44
Biological science technicians	740	.42	20.12
All other science technicians	3,510	2.02	(1)
All other technicians	1,030	.59	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Agricultural chemicals (SIC 2870)

Field	Total	Percent of industry employment	Relative error
Total	5,550	7.38	(1)
Engineers	1,960	2.61	(1)
Chemical	1,080	1.45	7.75
Electrical/electronic	120	.16	9.80
Industrial	140	.18	12.62
Mechanical	410	.55	9.69
Safety	110	.14	7.08
Other, n.e.c.	100	.13	(1)
Scientists	1,490	1.99	(1)
Chemists	1,200	1.61	7.48
Agricultural scientists	50	.06	24.76
Biological scientists	120	.16	29.73
Systems analysts	120	.16	11.95
Technicians	2,100	2.78	(1)
Computer programmer	180	.24	14.39
Drafter	170	.22	8.12
Electrical/electronic technicians	80	.10	17.69
All other engineering technicians	210	.28	(1)
Physical science technicians	520	.69	15.49
Biological science technicians	280	.37	18.55
All other science technicians	320	.43	(1)
All other technicians	340	.45	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous chemical products (SIC 2890)

Field	Total	Percent of industry employment	Relative error
Total	8,930	9.40	(1)
Engineers	2,090	2.19	(1)
Chemical	1,080	1.14	9.27
Electrical/electronic	70	.07	19.54
Industrial	180	.19	10.17
Mechanical	410	.43	12.50
Safety	110	.11	9.41
Other, n.e.c	240	.25	(1)
Scientists	3,640	3.85	(1)
Mathematical scientists	60	.06	17.70
Chemists	3,230	3.43	5.70
Biological scientists	90	.09	25.74
All other natural and mathematical scientists	60	.06	(1)
Systems analysts	200	.21	13.80
Technicians	3,200	3.36	(1)
Computer programmer	260	.27	13.12
Drafter	150	.15	12.48
Electrical/electronic technicians	70	.07	23.08
All other engineering technicians	330	.35	(1)
Physical science technicians	1,470	1.56	14.11
Biological science technicians	130	.13	36.60
All other science technicians	430	.45	(1)
All other technicians	360	.38	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Petroleum refining (SIC 2910)

Field	Total	Percent of industry employment	Relative error
Total	17,180	10.69	(1)
Engineers	8,720	5.42	(1)
Chemical	3,590	2.24	11.29
Civil	400	.25	18.42
Electrical/electronic	410	.25	12.72
Industrial	430	.26	23.36
Mechanical	2,220	1.39	11.64
Petroleum	460	.28	24.26
Safety	370	.23	12.88
Other, n.e.c	840	.52	(1)
Scientists	2,770	1.72	(1)
Chemists	1,680	1.05	12.94
Earth scientists	320	.20	40.66
All other natural and mathematical scientists	70	.04	(1)
Systems analysts	700	.43	26.05
Technicians	5,690	3.55	(1)
Computer programmer	320	.20	20.00
Drafter	740	.46	10.48
Electrical/electronic technicians	240	.15	21.62
All other engineering technicians	1,680	1.05	(1)
Science technicians	1,640	1.02	14.91
All other technicians	1,070	.67	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Paving and roofing materials (SIC 2950)

Field	Total	Percent of industry employment	Relative error
Total	630	2.03	(1)
Engineers	240	.77	(1)
Industrial	60	.19	12.55
Mechanical	60	.19	11.67
Other, n.e.c.	120	.39	(1)
Scientists	120	.39	(1)
Chemists	120	.39	16.42
Technicians	270	.87	(1)
Engineering technicians	70	.22	(1)
Science technicians	160	.52	13.83
All other technicians	40	.13	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous petroleum and coal products (SIC 2990)

Field	Total	Percent of industry employment	Relative error
Total	880	7.04	(1)
Engineers	210	1.68	(1)
Chemical	100	.80	18.87
Other, n.e.c	110	.88	(1)
Scientists	340	2.72	(1)
Chemists	340	2.72	9.28
Technicians	330	2.64	(1)
Engineering technicians	110	.88	(1)
Science technicians	150	1.20	15.93
All other technicians	70	.56	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Tires and inner tubes (SIC 3010)

Field	Total	Percent of industry employment	Relative error
Total	10,860	8.87	(1)
Engineers	3,770	3.08	(1)
Chemical	1,050	.86	45.33
Electrical/electronic	350	.28	33.99
Industrial	540	.44	16.48
Mechanical	1,270	1.04	41.75
Other, n.e.c	560	.46	(1)
Scientists	2,270	1.35	(1)
Mathematical scientists	60	.04	38.26
Chemists	1,260	1.03	44.55
Systems analysts	950	.78	47.97
Technicians	4,820	3.94	(1)
Computer programmer	630	.51	44.35
Drafter	320	.26	35.62
Industrial engineering technicians	240	.19	42.45
All other engineering technicians	890	.73	(1)
Science technicians	790	.65	24.58
All other technicians	1,950	1.60	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Rubber and plastics footwear (SIC 3020)

Field	Total	Percent of industry employment	Relative error
Total	180	0.81	(1)
Engineers	80	.36	(1)
Field unspecified	80	.36	(1)
Technicians	100	.45	(1)
Field unspecified	100	.45	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Reclaimed rubber (SIC 3030)

Field	Total	Percent of industry employment	Relative error
Total	20	2.22	(1)
Technicians	20	2.22	(1)
Field unspecified	20	2.22	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Rubber and plastics hose and belting (SIC 3040)

Field	Total	Percent of industry employment	Relative error
Total	920	4.17	(1)
Engineers	500	2.27	(1)
Industrial	90	.41	19.16
Mechanical	150	.68	18.02
Other, n.e.c.	260	1.18	(1)
Technicians	420	1.90	(1)
Engineering technicians	240	1.09	(1)
Science technicians	120	.54	29.24
All other technicians	60	.27	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Fabricated rubber products, n.e.c. (SIC 3060)

Field	Total	Percent of industry employment	Relative error
Total	4,110	3.98	(1)
Engineers	1,650	1.60	(1)
Chemical	170	.16	6.62
Electrical/electronic	60	.05	8.46
Industrial	470	.46	7.25
Mechanical	630	.62	7.30
Other, n.e.c.	320	.31	(1)
Scientists	670	.65	(1)
Chemists	550	.54	5.92
Systems analysts	120	.11	10.55
Technicians	1,790	1.73	(1)
Computer programmer	190	.18	8.73
Drafter	280	.27	6.75
Industrial engineering technicians	120	.11	5.91
All other engineering technicians	540	.53	(1)
Science technicians	440	.43	7.65
All other technicians	220	.21	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous plastics products (SIC 3070)

Field	Total	Percent of industry employment	Relative error
Total	12,070	2.65	(1)
Engineers	5,800	1.28	(1)
Chemical	710	.16	11.19
Electrical/electronic	340	.07	11.42
Industrial	1,450	.32	6.94
Mechanical	1,770	.39	6.32
Other, n.e.c	1,530	.34	(1)
Scientists	1,240	.27	(1)
Chemists	820	.18	17.22
Systems analysts	420	.09	12.90
Technicians	5,030	1.10	(1)
Computer programmer	520	.11	7.85
Drafter	1,100	.24	6.40
Industrial engineering technicians	350	.07	10.35
All other engineering technicians	1,270	.28	(1)
Science technicians	1,470	.33	12.34
All other technicians	320	.07	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Leather tanning and finishing (SIC 3110)

Field	Total	Percent of industry employment	Relative error
Total	190	0.98	(1)
Engineers	60	.31	(1)
Field unspecified	60	.31	(1)
Technicians	130	.67	(1)
Engineering technicians	6[illegible]	.31	15.07
All other technicians	70	.36	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Boot and shoe cut stock and findings (SIC 3130)

Field	Total	Percent of industry employment	Relative error
Total	20	0.18	(1)
Technicians	20	.18	(1)
Field unspecified	20	.18	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Footwear, except rubber (SIC 3140)

Field	Total	Percent of industry employment	Relative error
Total	940	0.61	(1)
Engineers	370	.24	(1)
Industrial	270	.18	7.16
Mechanical	100	.06	12.78
Scientists	120	.08	(1)
Systems analysts	120	.08	18.23
Technicians	450	.29	(1)
Computer programmer	200	.13	15.28
Engineering technicians	160	.10	45.50
All other technicians	90	.06	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Luggage (SIC 3160)

Field	Total	Percent of industry employment	Relative error
Total	130	0.76	(1)
Engineers	80	.47	(1)
Industrial	80	.47	19.15
Technicians	50	.29	(1)
Field unspecified	50	.29	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Handbags and personal leather goods (SIC 3170)

Field	Total	Percent of industry employment	Relative error
Total	120	0.39	(1)
Engineers	70	.23	(1)
Field unspecified	70	.23	(1)
Technicians	50	.16	(1)
Field unspecified	50	.16	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Leather goods, n.e.c. (SIC 3190)

Field	Total	Percent of industry employment	Relative error
Total	20	0.21	(1)
Technicians	20	.21	(1)
Field unspecified	20	.21	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Flat glass (SIC 3210)

Field	Total	Percent of industry employment	Relative error
Total	750	4.37	(1)
Engineers	350	2.04	(1)
Electrical/electronic	50	.29	13.08
Industrial	60	.35	13.50
Machanical	80	.47	14.32
Ceramic	50	.29	14.33
Other, n.e.c	110	.64	(1)
Scientists	80	.47	(1)
Systems analysts	80	.47	15.18
Technicians	320	1.86	(1)
Electrical/electronic technicians	100	.58	27.56
All other engineering technicians	90	.52	(1)
All other technicians	130	.76	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Glass and glassware, pressed or blown (SIC 3220)

Field	Total	Percent of industry employment	Relative error
Total	4,660	3.63	(1)
Engineers	2,030	1.59	(1)
Chemical	100	.07	33.71
Electrical/electronic	180	.14	23.57
Industrial	480	.38	30.44
Mechanical	670	.53	28.35
Ceramic	260	.20	17.90
Other, n.e.c	340	.27	(1)
Scientists	400	.31	(1)
Chemists	160	.12	47.16
Systems analysts	240	.19	37.33
Technicians	2,230	1.73	(1)
Computer programmer	130	.10	12.29
Drafter	320	.25	22.17
Electrical/electronic technicians	310	.24	23.51
Mechanical engineering technicians	190	.15	37.34
Industrial engineering technicians	110	.08	32.35
All other engineering technicians	360	.28	(1)
Science technicians	410	.32	47.80
All other technicians	400	.31	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Products of purchased glass (SIC 3230)

Field	Total	Percent of industry employment	Relative error
Total	1,080	2.38	(1)
Engineers	440	.97	(1)
Industrial	140	.31	15.63
Mechanical	170	.37	16.65
Other, n.e.c	130	.29	(1)
Technicians	640	1.41	(1)
Computer programmer	70	.15	17.81
Drafter	260	.58	20.63
All other engineering technicians	100	.22	(1)
Science technicians	150	.33	48.49
All other technicians	60	.13	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Cement, hydraulic (SIC 3240)

Field	Total	Percent of industry employment	Relative error
Total	1,540	5.04	(1)
Engineers	370	1.19	(1)
Civil	50	.16	10.12
Electrical/electronic	60	.19	8.82
Industrial	90	.29	9.34
Mechanical	80	.26	8.98
Other, n.e.c	90	.29	(1)
Scientists	450	1.49	(1)
Chemists	450	1.49	6.32
Technicians	720	2.36	(1)
Drafter	60	.19	16.55
Electrical/electronic technicians	80	.26	15.89
Science technicians	470	1.55	7.13
All other technicians	110	.36	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Structural clay products (SIC 3250)

Field	Total	Percent of industry em-ploy-ment	Relative error
Total	720	1.54	(1)
Engineers	400	.86	(1)
Industrial	90	.19	14.18
Ceramic	210	.46	14.53
Other, n.e.c	100	.21	(1)
Technicians	320	.68	(1)
Drafter	90	.19	19.09
All other engineering technicians	90	.19	(1)
Science technicians	80	.17	47.83
All other technicians	60	.13	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Pottery and related products (SIC 3260)

Field	Total	Percent of industry employment	Relative error
Total	1,290	2.69	(1)
Engineers	630	1.32	(1)
Industrial	130	.27	12.14
Mechanical	110	.23	14.07
Ceramic	270	.57	12.32
Other, n.e.c	120	.25	(1)
Scientists	60	.12	(1)
Systems analysts	60	.12	22.45
Technicians	600	1.25	(1)
Computer programmer	60	.12	15.88
Drafter	100	.21	14.68
Industrial engineering technicians	70	.14	18.73
All other engineering technicians	120	.25	(1)
Science technicians	160	.34	40.70
All other technicians	90	.19	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Concrete, gypsum, and plaster products (SIC 3270)

Field	Total	Percent of industry employment	Relative error
Total	3,220	1.49	(1)
Engineers	1,340	.62	(1)
Civil	430	.20	8.81
Industrial	490	.23	5.85
Mechanical	240	.11	12.72
Other, n.e.c	180	.08	(1)
Scientists	330	.15	(1)
Chemists	200	.09	22.62
Systems analysts	130	.06	21.16
Technicians	1,550	.72	(1)
Computer programmer	210	.10	12.09
Drafter	1,030	.49	6.11
All other engineering technicians	100	.04	(1)
Science technicians	100	.04	14.76
All other technicians	110	.05	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Cut stone and stone products (SIC 3280)

Field	Total	Percent of industry employment	Relative error
Total	280	2.39	(1)
Technicians	280	2.39	(1)
Drafter	260	2.22	9.07
All other technicians	20	.17	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous nonmetallic mineral products (SIC 3290)

Field	Total	Percent of industry employment	Relative error
Total	6,810	4.88	(1)
Engineers	3,220	2.32	(1)
Chemical	230	.16	14.39
Civil	60	.04	36.95
Electrical/electronic	100	.07	11.36
Industrial	700	.51	6.79
Mechanical	920	.67	12.41
Ceramic	230	.16	16.71
Other, n.e.c	980	.71	(1)
Scientists	690	.49	(1)
Chemists	390	.28	14.82
Systems analysts	300	.21	14.07
Technicians	2,900	2.07	(1)
Computer programmer	240	.17	11.29
Drafter	570	.41	8.78
Electrical/electronic technicians	100	.07	18.30
Mechanical engineering technicians	400	.29	30.48
Industrial engineering technicians	160	.11	22.84
All other engineering technicians	450	.32	(1)
Science technicians	420	.30	15.25
All other technicians	560	.40	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Blast furnaces and basic steel products (SIC 3310)

Field	Total	Percent of industry employment	Relative error
Total	21,860	3.91	(1)
Engineers	9,510	1.70	(1)
Chemical	150	.02	11.37
Civil	640	.11	14.53
Electrical/electronic	1,150	.21	10.79
Industrial	2,110	.38	6.13
Mechanical	1,860	.34	8.08
Metallurgists/metallurgical	2,060	.37	6.49
Safety	420	.07	8.26
Other, n.e.c	1,120	.20	(1)
Scientists	2,440	.44	(1)
Chemists	1,060	.19	6.83
All other natural and mathematical scientists	60	.01	(1)
Systems analysts	1,320	.24	8.09
Technicians	9,910	1.77	(1)
Computer programmer	1,000	.18	6.46
Drafter	1,510	.27	6.29
Electrical/electronic technicians	1,200	.22	15.60
Radiographer	80	.01	15.40
Mechanical engineering technicians	240	.04	14.01
Tool programmer, numerical controls	140	.02	22.30
Spectroscopist	410	.07	10.75
Industrial engineering technicians	980	.18	11.45
All other engineering technicians	1,560	.28	(1)
Science technicians	1,940	.35	9.55
All other technicians	850	.15	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Iron and steel foundries (SIC 3320)

Field	Total	Percent of industry employment	Relative error
Total	7,510	3.27	(1)
Engineers	3,630	1.59	(1)
Civil	90	.04	18.80
Electrical/electronic	100	.04	10.63
Industrial	820	.36	8.88
Mechanical	790	.35	10.30
Metallurgists/metallurgical	750	.33	7.91
Safety	130	.05	10.14
Other, n.e.c.	950	.42	(1)
Scientists	380	.16	(1)
Chemists	160	.07	9.65
Systems analysts	220	.09	9.39
Technicians	3,500	1.52	(1)
Computer programmer	220	.09	8.17
Drafter	560	.25	7.97
Electrical/electronic technicians	120	.05	15.89
Radiographer	380	.17	15.72
Mechanical engineering technicians	220	.09	16.75
Tool programmer, numerical controls	70	.03	24.33
Spectroscopist	220	.09	7.49
Industrial engineering technicians	460	.20	8.30
All other engineering technicians	380	.17	(1)
Science technicians	460	.20	8.64
All other technicians	410	.18	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Primary nonferrous metals (SIC 3330)

Field	Total	Percent of industry employment	Relative error
Total	4,000	5.33	(1)
Engineers	1,560	2.08	(1)
Chemical	200	.27	8.57
Electrical/electronic	250	.33	7.09
Industrial	200	.27	13.56
Mechanical	380	.51	6.05
Metallurgists/metallurgical	250	.33	5.26
Safety	80	.10	4.92
Other, n.e.c	200	.27	(1)
Scientists	580	.77	(1)
Chemists	390	.52	5.60
All other natural and mathematical scientists	60	.08	(1)
Systems analysts	130	.17	7.94
Technicians	1,860	2.48	(1)
Computer programmer	90	.12	7.71
Drafter	240	.32	5.99
Electrical/electronic technicians	100	.13	12.21
Mechanical engineering technicians	120	.16	36.98
Spectroscopist	100	.13	10.45
All other engineering technicians	220	.29	(1)
Science technicians	560	.75	9.00
All other technicians	430	.58	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Secondary nonferrous metals (SIC 3340)

Field	Total	Percent of industry employment	Relative error
Total	1,170	4.56	(1)
Engineers	430	1.67	(1)
Chemical	50	.19	37.17
Industrial	80	.31	13.57
Mechanical	60	.23	17.69
Metallurgists/metallurgical	150	.59	26.61
Other, n.e.c.	90	.35	(1)
Scientists	300	1.18	(1)
Chemists	300	1.18	14.65
Technicians	440	1.71	(1)
Spectroscopist	100	.39	16.53
All other engineering technicians	100	.39	(1)
Science technicians	180	.70	18.87
All other technicians	60	.23	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Nonferrous rolling and drawing (SIC 3350)

Field	Total	Percent of industry employment	Relative error
Total	11,280	5.10	(1)
Engineers	5,130	2.32	(1)
Chemical	230	.10	12.87
Civil	100	.04	16.45
Electrical/electronic	970	.44	12.04
Industrial	1,030	.47	8.06
Mechanical	1,360	.62	10.16
Metallurgists/metallurgical	790	.36	14.37
Safety	150	.06	11.11
Other, n.e.c	500	.23	(1)
Scientists	1,030	.47	(1)
Chemists	420	.19	12.06
Systems analysts	610	.28	8.99
Technicians	5,120	2.31	(1)
Computer programmer	560	.25	12.96
Drafter	910	.41	8.61
Electrical/electronic technicians	700	.32	12.56
Mechanical engineering technicians	180	.08	11.52
Tool programmer, numerical controls	100	.04	29.58
Spectroscopist	240	.11	14.88
Industrial engineering technicians	250	.11	13.07
All other engineering technicians	760	.35	(1)
Science technicians	900	.41	17.62
All other technicians	520	.23	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Nonferrous foundries (castings) (SIC 3360)

Field	Total	Percent of industry employment	Relative error
Total	2,170	2.21	(1)
Engineers	1,130	1.16	(1)
Industrial	320	.33	7.75
Mechanical	350	.36	7.67
Metallurgists/metallurgical	190	.19	12.47
Other, n.e.c	270	.28	(1)
Technicians	1,040	1.05	(1)
Computer programmer	70	.07	11.54
Drafter	360	.37	7.34
Radiographer	160	.16	15.48
Industrial engineering technicians	100	.10	10.83
All other engineering technicians	240	.24	(1)
All other technicians	110	.11	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous primary metal products (SIC 3390)

Field	Total	Percent of industry employment	Relative error
Total	1,090	4.05	(1)
Engineers	550	2.05	(1)
Industrial	110	.41	13.04
Mechanical	80	.30	12.27
Metallurgists and metallurgical	220	.82	11.67
Other, n.e.c	140	.52	(1)
Scientists	70	.26	(1)
Chemists	70	.26	20.59
Technicians	470	1.74	(1)
Drafter	70	.26	16.62
All other engineering technicians	90	.33	(1)
Science technicians	220	.82	24.74
All other technicians	90	.33	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Metal cans and shipping containers (SIC 3410)

Field	Total	Percent of industry employment	Relative error
Total	1,900	2.52	(1)
Engineers	990	1.31	(1)
Electrical/electronic	100	.13	31.30
Industrial	230	.30	15.72
Mechanical	600	.80	23.39
Other, n.e.c.	60	.08	(1)
Scientists	150	.20	(1)
Chemists	60	.08	40.69
Systems analysts	90	.12	36.02
Technicians	760	1.01	(1)
Computer programmer	60	.08	29.11
Drafter	150	.20	30.28
Electrical/electronic technicians	120	.16	26.94
All other engineering technicians	220	.29	(1)
Science technicians	60	.08	45.63
All other technicians	150	.20	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Cutlery, handtools, and hardware (SIC 3420)

Field	Total	Percent of industry employment	Relative error
Total	5,130	3.15	(1)
Engineers	2,800	1.73	(1)
Electrical/electronic	90	.05	13.52
Industrial	1,100	.68	6.97
Mechanical	1,200	.75	7.10
Other, n.e.c	410	.25	(1)
Scientists	430	.26	(1)
Physical scientists	70	.04	(1)
Systems analysts	360	.22	12.83
Technicians	1,900	1.16	(1)
Computer programmer	350	.21	9.44
Drafter	750	.47	6.44
Electrical/electronic technicians	70	.04	15.45
Mechanical engineering technicians	130	.08	10.87
All other engineering technicians	290	.18	(1)
Science technicians	200	.12	26.37
All other technicians	110	.06	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Heating equipment and plumbing fixtures (SIC 3430)

Field	Total	Percent of industry employment	Relative error
Total	2,740	4.11	(1)
Engineers	1,310	1.97	(1)
Electrical/electronic	70	.10	19.45
Industrial	430	.65	6.62
Mechanical	670	1.01	12.34
Other, n.e.c	140	.21	(1)
Scientists	100	.15	(1)
Systems analysts	100	.15	9.80
Technicians	1,330	1.99	(1)
Computer programmer	140	.21	9.01
Drafter	710	1.07	7.43
Mechanical engineering technicians	170	.25	14.57
All other engineering technicians	160	.24	(1)
All other technicians	150	.22	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Fabricated structural metal products (SIC 3440)

Field	Total	Percent of industry employment	Relative error
Total	26,640	5.21	(1)
Engineers	9,330	1.82	(1)
Chemical	90	.01	17.33
Civil	1,210	.24	10.77
Electrical/electronic	440	.08	17.96
Industrial	2,110	.42	8.30
Mechanical	3,710	.73	8.17
Metallurgists/metallurgical	250	.04	21.46
Other, n.e.c.	1,520	.30	(1)
Scientists	550	.10	(1)
Chemists	60	.01	23.94
Systems analysts	490	.09	11.14
Technicians	16,760	3.29	(1)
Computer programmer	1,010	.20	9.85
Drafter	12,280	2.44	3.65
Electrical/electronic technicians	300	.05	16.61
Mechanical engineering technicians	610	.12	18.64
Tool programmer, numerical controls	300	.05	10.55
All other engineering technicians	1,150	.22	(1)
Science technicians	290	.05	24.69
All other technicians	820	.16	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Screw machine products and bolts, nuts, and washers (SIC 3450)

Field	Total	Percent of industry employment	Relative error
Total	2,620	2.39	(1)
Engineers	1,360	1.25	(1)
Industrial	370	.34	7.69
Mechanical	770	.71	9.72
Metallurgists/metallurgical	80	.07	12.69
Other, n.e.c	140	.13	(1)
Scientists	110	.10	(1)
Systems analysts	110	.10	11.81
Technicians	1,150	1.04	(1)
Computer programmer	170	.15	9.97
Drafter	430	.40	6.30
Mechanical engineering technicians	140	.13	15.44
Tool programmer, numerical controls	110	.10	12.34
All other engineering technicians	170	.15	(1)
Science technicians	80	.07	18.75
All other technicians	50	.04	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Metal forgings and stampings (SIC 3460)

Field	Total	Percent of industry employment	Relative error
Total	6,110	2.30	(1)
Engineers	3,270	1.24	(1)
Civil	60	.02	28.99
Electrical/electronic	110	.04	15.07
Industrial	1,180	.45	5.39
Mechanical	1,170	.45	5.96
Metallurgists/metallurgical	180	.06	13.27
Other, n.e.c.	570	.22	(1)
Scientists	350	.11	(1)
Chemists	50	.01	18.86
All other natural and mathematical scientists	50	.01	(1)
Systems analysts	250	.09	17.29
Technicians	2,490	.95	(1)
Computer programmer	320	.12	11.02
Drafter	1,100	.42	6.53
Electrical/electronic technicians	160	.06	14.79
Mechanical engineering technicians	130	.05	17.67
Tool programmer, numerical controls	210	.08	12.30
All other engineering technicians	310	.12	(1)
All other technicians	260	.10	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Coating, engraving, and allied services (SIC 3470)

Field	Total	Percent of industry employment	Relative error
Total	1,360	1.36	(1)
Engineers	590	.59	(1)
Electrical/electronic	50	.05	37.28
Industrial	120	.12	15.83
Mechanical	320	.32	13.64
Other, n.e.c	100	.10	(1)
Scientists	320	.32	(1)
Chemists	320	.32	10.01
Technicians	450	.45	(1)
Drafter	150	.15	19.43
All other engineering technicians	100	.10	(1)
Science technicians	120	.12	16.68
All other technicians	80	.08	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Ordnance and accessories, n.e.c. (SIC 3480)

Field	Total	Percent of industry employment	Relative error
Total	5,520	8.90	(1)
Engineers	2,480	4.01	(1)
Civil	60	.09	21.69
Electrical/electronic	220	.35	16.49
Industrial	930	1.51	10.91
Mechanical	850	1.38	8.21
Other, n.e.c	420	.68	(1)
Scientists	370	.59	(1)
Chemists	230	.37	30.81
Systems analysts	140	.22	13.60
Technicians	2,670	4.30	(1)
Computer programmer	190	.30	10.76
Drafter	400	.65	10.26
Electrical/electronic technicians	300	.48	14.25
Mechanical engineering technicians	220	.35	17.65
Tool programmer, numerical controls	100	.16	16.96
All other engineering technicians	490	.79	(1)
Science technicians	540	.87	34.29
All other technicians	430	.70	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Nonferrous foundries (castings) (SIC 3360)

Field	Total	Percent of industry employment	Relative error
Total	2,170	2.21	(1)
Engineers	1,130	1.16	(1)
Industrial	320	.33	7.75
Mechanical	350	.36	7.67
Metallurgists/metallurgical	190	.19	12.47
Other, n.e.c	270	.28	(1)
Technicians	1,040	1.05	(1)
Computer programmer	70	.07	11.54
Drafter	360	.37	7.34
Radiographer	160	.16	15.48
Industrial engineering technicians	100	.10	10.83
All other engineering technicians	240	.24	(1)
All other technicians	110	.11	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous primary metal products (SIC 3390)

Field	Total	Percent of industry employment	Relative error
Total	1,090	4.05	(1)
Engineers	550	2.05	(1)
Industrial	110	.41	13.04
Mechanical	80	.30	12.27
Metallurgists/metallurgical	220	.82	11.67
Other, n.e.c	140	.52	(1)
Scientists	70	.26	(1)
Chemists	70	.26	20.59
Technicians	470	1.74	(1)
Drafter	70	.26	16.62
All other engineering technicians	90	.33	(1)
Science technicians	220	.82	24.74
All other technicians	90	.33	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous fabricated metal products (SIC 3490)

Field	Total	Percent of industry employment	Relative error
Total	11,950	4.67	(1)
Engineers	5,310	2.09	(1)
Chemical	60	.02	23.39
Civil	60	.02	19.15
Electrical/electronic	380	.15	24.05
Industrial	1,900	.75	5.31
Mechanical	2,400	.95	5.38
Metallurgists/metallurgical	130	.05	10.47
Other, n.e.c	380	.15	(1)
Scientists	480	.18	(1)
Chemists	80	.03	19.41
Systems analysts	400	.15	8.90
Technicians	6,160	2.40	(1)
Computer programmer	490	.19	6.30
Drafter	2,840	1.12	6.20
Electrical/electronic technicians	420	.16	23.96
Mechanical engineering technicians	740	.29	12.24
Tool programmer, numerical controls	290	.11	9.67
All other engineering technicians	900	.35	(1)
Science technicians	160	.06	14.66
All other technicians	320	.12	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Engines and turbines (SIC 3510)

Field	Total	Percent of industry employment	Relative error
Total	15,720	11.60	(1)
Engineers	8,940	6.62	(1)
Civil	80	.05	31.25
Electrical/electronic	800	.59	21.97
Industrial	1,890	1.40	13.84
Mechanical	3,540	2.63	16.02
Metallurgists/metallurgical	250	.18	23.49
Other, n.e.c.	2,380	1.77	(1)
Scientists	860	.63	(1)
Physical scientists	270	.20	(1)
Systems analysts	590	.43	51.01
Technicians	5,920	4.35	(1)
Computer programmer, business	440	.32	16.64
Computer programmer, scientific and technical	130	.09	23.00
Drafter	1,320	.98	14.57
Electrical/electronic technicians	620	.46	25.80
Mechanical engineering technicians	1,040	.77	21.98
Tool programmer, numerical controls	340	.25	31.21
Industrial engineering technicians	360	.26	22.46
All other engineering technicians	1,070	.79	(1)
Science technicians	280	.20	47.96
All other technicians	320	.23	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Farm and garden machinery and equipment (SIC 3520)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	10,390	5.87	(1)
Engineers	5,170	2.93	(1)
Chemical	180	.10	26.06
Civil	170	.09	21.11
Electrical/electronic	300	.17	15.51
Industrial	1,950	1.11	11.02
Mechanical	1,960	1.12	13.38
Metallurgists/metallurgical	250	.14	22.31
Other, n.e.c	360	.20	(1)
Scientists	660	.37	(1)
Systems analysts	660	.37	42.21
Technicians	4,560	2.57	(1)
Computer programmer, business	360	.20	8.63
Computer programmer, scientific and technical	90	.05	23.68
Drafter	1,430	.81	5.68
Electrical/electronic technicians	210	.12	16.33
Mechanical engineering technicians	590	.33	15.91
Tool programmer, numerical controls	110	.06	12.71
Industrial engineering technicians	880	.50	16.19
All other engineering technicians	580	.33	(1)
Science technicians	100	.05	24.15
All other technicians	210	.12	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Construction and related machinery and equipment (SIC 3530)

Field	Total	Percent of industry employment	Relative error
Total	31,800	8.08	(1)
Engineers	14,430	3.68	(1)
Civil	390	.10	26.54
Electrical/electronic	1,550	.39	14.34
Industrial	4,450	1.14	6.82
Mechanical	5,980	1.53	6.70
Metallurgists/metallurgical	300	.07	15.21
Other, n.e.c	1,760	.45	(1)
Scientists	1,530	.38	(1)
Physical scientists	170	.04	(1)
Systems analysts	1,360	.34	31.08
Technicians	15,840	4.02	(1)
Computer programmer, business	1,070	.27	9.22
Computer programmer, scientific and technical	260	.06	18.89
Drafter	8,600	2.20	8.05
Electrical/electronic technicians	910	.23	16.76
Mechanical engineering technicians	1,100	.28	17.50
Tool programmer, numerical controls	950	.24	9.07
Industrial engineering technicians	1,140	.29	14.64
All other engineering technicians	870	.22	(1)
Science technicians	210	.05	24.61
All other technicians	730	.18	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Metalworking machinery and equipment (SIC 3540)

Field	Total	Percent of industry employment	Relative error
Total	23,660	6.28	(1)
Engineers	11,370	3.03	(1)
Civil	150	.04	24.48
Electrical/electronic	1,670	.44	8.45
Industrial	3,400	.91	6.57
Mechanical	5,040	1.35	5.81
Metallurgists/metallurgical	290	.07	16.07
Other, n.e.c	820	.22	(1)
Scientists	660	.17	(1)
Systems analysts	660	.17	28.19
Technicians	11,630	3.08	(1)
Computer programmer, business	640	.17	6.49
Computer programmer, scientific and technical	230	.06	12.26
Drafter	6,080	1.63	3.97
Electrical/electronic technicians	1,420	.38	11.32
Mechanical engineering technicians	500	.13	11.98
Tool programmer, numerical controls	1,040	.27	5.86
Industrial engineering technicians	510	.13	11.93
All other engineering technicians	480	.12	(1)
Science technicians	300	.08	36.96
All other technicians	430	.11	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Special industry machery except metalworking (SIC 3550)

Field	Total	Percent of industry em-ploy-ment	Relative error
Total	21,610	10.13	(1)
Engineers	9,860	4.64	(1)
Chemical	280	.13	17.76
Electrical/electronic	1,520	.71	8.17
Industrial	2,730	1.29	25.87
Mechanical	4,730	2.23	5.99
Other, n.e.c	600	.28	(1)
Scientists	540	.24	(1)
Chemists	160	.07	21.52
Systems analysts	380	.17	32.11
Technicians	11,210	5.25	(1)
Computer programmer, business	900	.42	34.92
Computer programmer, scientific and technical	640	.30	49.55
Drafter	4,920	2.32	3.78
Electrical/electronic technicians	1,880	.88	26.52
Mechanical engineering technicians	670	.31	12.46
Tool programmer, numerical controls	520	.24	6.25
Industrial engineering technicians	360	.17	11.75
All other engineering technicians	580	.27	(1)
Science technicians	260	.12	18.85
All other technicians	480	.22	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

General industrial machinery and equipment (SIC 3560)

Field	Total	Percent of industry employment	Relative error
Total	26,340	8.12	(1)
Engineers	13,120	4.06	(1)
Chemical	270	.08	19.51
Civil	530	.16	22.85
Electrical/electronic	1,450	.45	6.93
Industrial	3,460	1.07	5.26
Mechanical	5,750	1.79	5.94
Metallurgists/metallurgical	270	.08	9.55
Other, n.e.c.	1,390	.43	(1)
Scientists	850	.25	(1)
Chemists	80	.02	18.52
Systems analysts	770	.23	26.32
Technicians	12,370	3.81	(1)
Computer programmer, business	890	.27	6.82
Computer programmer, scientific and technical	200	.06	12.66
Drafter	5,460	1.70	3.88
Electrical/electronic technicians	1,170	.36	8.31
Mechanical engineering technicians	1,560	.48	9.05
Tool programmer, numerical controls	610	.19	6.41
Industrial engineering technicians	820	.25	8.79
All other engineering technicians	920	.28	(1)
Science technicians	350	.10	34.79
All other technicians	390	.12	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Office, computing, and accounting machines (SIC 3570)

Field	Total	Percent of industry employment	Relative error
Total	120,370	27.76	(1)
Engineers	51,360	11.86	(1)
Chemical	110	.02	16.39
Electrical/electronic	25,950	6.00	.58
Industrial	11,040	2.55	14.87
Mechanical	4,670	1.08	10.08
Other, n.e.c	9,590	2.21	(1)
Scientists	6,610	1.51	(1)
Chemists	110	.02	14.98
All other natural and mathematical scientists	90	.02	(1)
Systems analysts	6,410	1.47	38.65
Technicians	62,400	14.39	(1)
Computer programmer, business	10,220	2.36	17.28
Computer programmer, scientific and technical	11,530	2.66	15.91
Drafter	3,500	.80	5.62
Electrical/electronic technicians	25,900	5.99	7.07
Mechanical engineering technicians	2,520	.58	23.61
Tool programmer, numerical controls	220	.05	33.61
Industrial engineering technicians	670	.15	15.76
All other engineering technicians	5,050	1.16	(1)
Science technicians	350	.08	42.01
All other technicians	2,440	.56	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Refrigeration and service industry machinery (SIC 3580)

Field	Total	Percent of industry employment	Relative error
Total	12,420	7.30	(1)
Engineers	5,450	3.22	(1)
Civil	120	.07	30.10
Electrical/electronic	480	.28	12.14
Industrial	1,620	.96	7.25
Mechanical	2,750	1.63	22.65
Other, n.e.c	480	.28	(1)
Scientists	490	.27	(1)
Chemists	90	.05	19.22
Systems analysts	400	.22	63.11
Technicians	6,480	3.81	(1)
Computer programmer, business	390	.23	12.83
Computer programmer, scientific and technical	110	.06	21.04
Drafter	2,500	1.48	7.35
Electrical/electronic technicians	800	.47	14.57
Mechanical engineering technicians	720	.42	25.72
Tool programmer, numerical controls	120	.07	11.06
Industrial engineering technicians	760	.45	31.89
All other engineering technicians	360	.21	(1)
Science technicians	260	.15	21.42
All other technicians	460	.27	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous machinery, except electrical (SIC 3590)

Field	Total	Percent of industry employment	Relative error
Total	9,210	3.06	(1)
Engineers	4,930	1.66	(1)
Electrical/electronic	510	.17	9.72
Industrial	1,780	.60	4.89
Mechanical	2,180	.74	7.36
Metallurgists/metallurgical	70	.02	14.28
Other, n.e.c	390	.13	(1)
Scientists	130	.04	(1)
Systems analysts	130	.04	(1)
Technicians	4,150	1.36	(1)
Computer programmer, business	230	.07	11.99
Computer programmer, scientific and technical	120	.04	14.49
Drafter	1,960	.66	5.40
Electrical/electronic technicians	400	.13	12.78
Mechanical engineering technicians	350	.11	19.60
Tool programmer, numerical controls	460	.15	6.60
Industrial engineering technicians	170	.05	17.00
All other engineering technicians	220	.07	(1)
All other technicians	240	.08	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Electrical transmission and distribution equipment (SIC 3610)

Field	Total	Percent of industry employment	Relative error
Total	10,060	8.18	(1)
Engineers	4,870	3.98	(1)
Electrical/electronic	2,660	2.18	8.44
Industrial	1,390	1.14	9.23
Mechanical	580	.47	11.41
Other, n.e.c.	240	.19	(1)
Scientists	320	.25	(1)
Systems analysts	320	.25	37.22
Technicians	4,870	3.95	(1)
Computer programmer, business	240	.19	10.93
Computer programmer, scientific and technical	110	.09	20.55
Drafter	2,180	1.79	8.44
Electrical/electronic technicians	1,470	1.20	8.49
Mechanical engineering technicians	240	.19	18.93
Tool programmer, numerical controls	60	.04	14.52
Industrial engineering technicians	200	.16	21.92
All other engineering technicians	150	.12	(1)
Science technicians	100	.08	36.56
All other technicians	120	.09	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Electrical industrial apparatus (SIC 3620)

Field	Total	Percent of industry employment	Relative error
Total	24,200	10.15	(1)
Engineers	11,710	4.93	(1)
Chemical	340	.14	34.85
Electrical/electronic	5,720	2.42	9.32
Industrial	2,400	1.01	5.93
Mechanical	2,280	.96	8.17
Metallurgists/metallurgical	110	.04	24.52
Other, n.e.c	860	.36	(1)
Scientists	1,150	.45	(1)
Mathematical scientists	80	.03	(1)
Chemists	140	.05	30.96
Physicists	180	.07	45.24
Systems analysts	750	.30	34.35
Technicians	11,340	4.77	(1)
Computer programmer, business	530	.22	10.60
Computer programmer, scientific and technical	290	.12	23.79
Drafter	2,790	1.18	6.79
Electrical/electronic technicians	4,140	1.75	8.95
Mechanical engineering technicians	740	.31	12.01
Tool programmer, numerical controls	190	.08	11.01
Industrial engineering technicians	530	.22	11.55
All other engineering technicians	1,210	.51	(1)
Science technicians	360	.15	31.16
All other technicians	560	.23	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Household appliances (SIC 3630)

Field	Total	Percent of industry employment	Relative error
Total	7,650	4.87	(1)
Engineers	4,200	2.70	(1)
Electrical/electronic	460	.29	13.18
Industrial	1,680	1.08	21.46
Mechanical	1,640	1.06	25.67
Other, n.e.c.	420	.27	(1)
Scientists	560	.35	(1)
Chemists	80	.05	24.29
Systems analysts	480	.30	51.53
Technicians	2,890	1.82	(1)
Computer programmer, business	300	.19	14.62
Computer programmer, scientific and technical	140	.09	34.04
Drafter	530	.34	11.60
Electrical/electronic technicians	500	.32	15.28
Mechanical engineering technicians	470	.30	18.92
Tool programmer, numerical controls	60	.03	32.91
Industrial engineering technicians	200	.12	10.38
All other engineering technicians	270	.17	(1)
Science technicians	230	.14	28.33
All other technicians	190	.12	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Electric lighting and wiring equipment (SIC 3640)

Field	Total	Percent of industry employment	Relative error
Total	11,600	5.53	(1)
Engineers	6,200	2.97	(1)
Chemical	80	.03	15.20
Electrical/electronic	1,560	.75	8.59
Industrial	2,200	1.06	14.89
Mechanical	1,580	.76	13.97
Other, n.e.c	780	.37	(1)
Scientists	650	.31	(1)
Chemists	110	.05	18.83
Systems analysts	540	.26	(1)
Technicians	4,750	2.25	(1)
Computer programmer	540	.26	(1)
Drafter	1,320	.63	9.07
Electrical/electronic technicians	940	.45	13.67
Mechanical engineering technicians	690	.33	27.20
Tool programmer, numerical controls	100	.04	17.26
Industrial engineering technicians	290	.13	12.34
All other engineering technicians	400	.19	(1)
Science technicians	90	.04	18.93
All other technicians	380	.18	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Radio and television receiving equipment (SIC 3650)

Field	Total	Percent of industry employment	Relative error
Total	9,260	8.45	(1)
Engineers	4,440	4.06	(1)
Electrical/electronic	1,510	1.38	17.68
Industrial	1,050	.96	17.19
Mechanical	560	.51	15.80
Other, n.e.c	1,320	1.21	(1)
Scientists	320	.28	(1)
Chemists	70	.06	36.11
Systems analysts	250	.22	59.53
Technicians	4,500	4.11	(1)
Computer programmer, business	310	.28	21.04
Computer programmer, scientific and technical	110	.10	48.23
Drafter	490	.45	20.81
Electrical/electronic technicians	2,630	2.41	15.60
Mechanical engineering technicians	480	.44	33.10
Industrial engineering technicians	90	.08	17.22
All other engineering technicians	240	.22	(1)
All other technicians	150	.13	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Communication equipment (SIC 3660)

Field	Total	Percent of industry employment	Relative error
Total	137,190	25.29	(1)
Engineers	75,130	13.88	(1)
Chemical	550	.10	33.64
Electrical/electronic	42,520	7.87	.69
Industrial	12,080	2.23	19.99
Mechanical	7,320	1.35	16.01
Metallurgists/metallurgical	250	.04	25.35
Other, n.e.c.	12,410	2.29	(1)
Scientists	8,480	1.52	(1)
Mathematician	760	.14	36.20
Statistician	260	.04	29.17
Chemists	150	.02	21.10
Physicists	1,330	.24	35.14
All other natural and mathematical scientists	900	.16	(1)
Social scientists	100	.01	40.29
Systems analysts	4,980	.91	29.14
Technicians	53,580	9.89	(1)
Computer programmer, business	1,960	.36	16.53
Computer programmer, scientific and technical	3,960	.73	15.34
Drafter	6,970	1.29	7.50
Electrical/electronic technicians	26,570	4.92	6.12
Mechanical engineering technicians	2,280	.42	10.64
Tool programmer, numerical controls	390	.07	16.52
Industrial engineering technicians	1,380	.25	20.91
All other engineering technicians	6,100	1.12	(1)
Science technicians	600	.11	27.68
All other technicians	3,370	.62	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Electronic components and accessories (SIC 3670)

Field	Total	Percent of industry employment	Relative error
Total	85,830	15.15	(1)
Engineers	40,370	7.15	(1)
Chemical	960	.17	25.70
Electrical/electronic	26,540	4.71	6.78
Industrial	6,040	1.07	14.53
Mechanical	3,740	.66	13.67
Metallurgists/metallurgical	200	.03	21.29
Other, n.e.c	2,890	.51	(1)
Scientists	3,740	.63	(1)
Mathematician	90	.01	45.93
Statistician	60	.01	35.72
Chemists	420	.07	15.35
Physicists	540	.09	25.84
Systems analysts	2,630	.45	62.40
Technicians	41,720	7.37	(1)
Computer programmer, business	3,100	.55	31.18
Computer programmer, scientific and technical	860	.15	31.84
Drafter	4,700	.83	12.03
Electrical/electronic technicians	22,810	4.05	11.46
Mechanical engineering technicians	2,890	.51	19.88
Tool programmer, numerical controls	430	.07	14.81
Industrial engineering technicians	500	.08	19.34
All other engineering technicians	3,870	.68	(1)
Science technicians	1,030	.18	25.74
All other technicians	1,530	.27	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous electrical equipment and supplies (SIC 3690)

Field	Total	Percent of industry employment	Relative error
Total	12,860	8.57	(1)
Engineers	6,210	4.15	(1)
Chemical	130	.08	18.48
Electrical/electronic	1,650	1.11	8.53
Industrial	1,470	.98	10.94
Mechanical	970	.65	8.36
Other, n.e.c	1,990	1.33	(1)
Scientists	570	.36	(1)
Statistician	70	.04	38.72
Chemists	90	.06	11.66
Systems analysts	410	.26	40.32
Technicians	6,080	4.06	(1)
Computer programmer, business	300	.20	13.07
Computer programmer, scientific and technical	100	.06	21.06
Drafter	800	.53	7.93
Electrical/electronic technicians	2,930	1.97	10.27
Mechanical engineering technicians	550	.37	17.38
Industrial engineering technicians	120	.08	12.76
All other engineering technicians	510	.34	(1)
Science technicians	210	.14	13.88
All other technicians	560	.37	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Motor vehicles and equipment (SIC 3710)

Field	Total	Percent of industry employment	Relative error
Total	43,390	5.82	(1)
Engineers	24,830	3.36	(1)
Chemical	130	.01	13.88
Civil	140	.01	11.26
Electrical/electronic	640	.08	11.42
Industrial	5,050	.69	3.39
Mechanical	3,810	.52	4.06
Metallurgists/metallurgical	350	.04	10.04
Other, n.e.c	14,710	2.01	(1)
Scientists	3,410	.44	(1)
Statistician	970	.13	13.67
All other mathematicians	130	.01	(1)
Chemists	230	.03	10.86
All other physical scientists	400	.05	(1)
Systems analysts	1,680	.22	41.62
Technicians	15,150	2.02	(1)
Computer programmer, business	1,460	.19	8.85
Computer programmer, scientific and technical	200	.02	23.91
Drafter	2,680	.36	5.40
Electrical/electronic technicians	470	.06	12.50
Mechanical engineering technicians	4,260	.58	22.65
Tool programmer, numerical controls	120	.01	8.09
Industrial engineering technicians	510	.06	4.96
All other engineering technicians	3,810	.52	(1)
Science technicians	320	.04	25.04
All other technicians	1,320	.18	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Aircraft and parts (SIC 3720)

Field	Total	Percent of industry employment	Relative error
Total	120,150	18.25	(1)
Engineers	71,300	10.87	(1)
Aeronautical	23,040	3.52	0.50
Chemical	510	.07	43.78
Civil	620	.09	22.77
Electrical/electronic	8,770	1.34	25.15
Industrial	11,320	1.73	12.27
Mechanical	9,780	1.49	13.24
Metallurgists/metallurgical	950	.14	22.97
Other, n.e.c.	16,310	2.49	(1)
Scientists	10,400	1.55	(1)
Mathematician	470	.07	35.29
Statistician	720	.11	38.66
All other mathematicians	140	.02	(1)
Chemists	480	.07	24.45
Physicists	250	.03	45.55
All other physical scientists	4,310	.65	(1)
Social scientists	570	.08	(1)
Systems analysts	3,460	.52	43.37
Technicians	38,450	5.83	(1)
Computer programmer, business	1,600	.24	18.89
Computer programmer, scientific and technical	840	.12	18.79
Drafter	5,820	.89	28.52
Electrical/electronic technicians	6,860	1.05	20.88
Mechanical engineering technicians	3,390	.51	17.78
Tool programmer, numerical controls	1,620	.24	16.08
Industrial engineering technicians	2,610	.39	31.30
All other engineering technicians	7,130	1.09	(1)
Science technicians	900	.13	27.75
All other technicians	7,680	1.17	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Ship and boat building and repair (SIC 3730)

Field	Total	Percent of industry employment	Relative error
Total	10,180	4.70	(1)
Engineers	4,720	2.19	(1)
Civil	460	.21	41.35
Electrical/electronic	800	.37	30.73
Industrial	1,070	.50	15.46
Mechanical	1,320	.61	28.46
Other, n.e.c	1,070	.50	(1)
Scientists	400	.18	(1)
Physical scientists	100	.04	(1)
Systems analysts	300	.14	(1)
Technicians	5,060	2.33	(1)
Computer programmer	380	.17	(1)
Drafter	2,380	1.11	19.39
Electrical/electronic technicians	430	.20	42.09
Mechanical engineering technicians	340	.15	34.10
Industrial engineering technicians	170	.07	25.35
All other engineering technicians	1,100	.51	(1)
All other technicians	260	.12	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Railroad equipment (SIC 3740)

Field	Total	Percent of industry employment	Relative error
Total	3,120	4.26	(1)
Engineers	1,680	2.30	(1)
Electrical/electronic	70	.09	27.27
Industrial	490	.67	20.20
Mechanical	560	.77	22.31
Other, n.e.c	560	.77	(1)
Scientists	80	.11	(1)
Systems analysts	80	.11	(1)
Technicians	1,360	1.85	(1)
Computer programmer	110	.15	(1)
Drafter	620	.85	15.09
Mechanical engineering technicians	60	.08	34.43
Industrial engineering technicians	200	.27	21.04
All other engineering technicians	180	.24	(1)
All other technicians	190	.26	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Motorbicycles, bicycles, and parts (SIC 3750)

Field	Total	Percent of industry employment	Relative error
Total	630	3.15	(1)
Engineers	290	1.45	(1)
Industrial	110	.55	22.04
Mechanical	180	.90	32.61
Scientists	50	.25	(1)
Systems analysts	50	.25	(1)
Technicians	290	1.45	(1)
Computer programmer	40	.20	(1)
Drafter	60	.30	16.72
All other engineering technicians	120	.60	(1)
All other technicians	70	.35	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Guided missiles and space vehicles and parts (SIC 3760)

Field	Total	Percent of industry employment	Relative error
Total	41,870	38.03	(1)
Engineers	28,480	25.89	(1)
Chemical	360	.32	42.22
Electrical/electronic	3,940	3.58	34.17
Industrial	3,550	3.23	45.59
Mechanical	3,700	3.36	27.23
Other, n.e.c	16,930	15.40	(1)
Scientists	2,060	1.86	(1)
Mathematical scientists	640	.58	(1)
Chemists	210	.19	40.95
All other physical scientists	590	.53	(1)
Systems analysts	620	.56	(1)
Technicians	11,330	10.28	(1)
Computer programmer	790	.71	(1)
Drafter	1,000	.90	49.44
All other engineering technicians	8,940	8.13	(1)
Science technicians	390	.35	(1)
All other technicians	210	.19	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous transportation equipment (SIC 3790)

Field	Total	Percent of industry employment	Relative error
Total	1,020	2.92	(1)
Engineers	520	1.50	(1)
Industrial	160	.46	10.58
Mechanical	200	.58	17.39
Other, n.e.c.	160	.46	(1)
Scientists	40	.11	(1)
Systems analysts	40	.11	(1)
Technicians	460	1.31	(1)
Computer programmer	50	.14	(1)
Drafter	240	.69	12.04
All other engineering technicians	140	.40	(1)
All other technicians	30	.08	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Engineering and scientific instruments (SIC 3&10)

Field	Total	Percent of industry employment	Relative error
Total	16,690	21.91	(1)
Engineers	8,360	10.99	(1)
Chemical	120	.15	32.88
Electrical/electronic	5,610	7.39	19.70
Industrial	460	.60	21.58
Mechanical	1,030	1.35	14.58
Other, n.e.c	1,140	1.50	(1)
Scientists	760	.98	(1)
Chemists	280	.36	23.42
All other natural and mathematical scientists	140	.18	(1)
Systems analysts	340	.44	14.09
Technicians	7,570	9.94	(1)
Computer programmer	500	.65	15.60
Drafter	1,590	2.09	7.31
Electrical/electronic technicians	3,410	4.49	15.23
Mechanical engineering technicians	380	.50	18.19
Tool programmer, numerical controls	90	.11	18.27
Industrial engineering technicians	100	.13	26.63
All other engineering technicians	890	1.17	(1)
Science technicians	190	.25	29.92
All other technicians	420	.55	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Measuring and controlling instruments (SIC 3820)

Field	Total	Percent of industry employment	Relative error
Total	40,050	16.38	(1)
Engineers	18,700	7.66	(1)
Chemical	260	.10	30.06
Electrical/electronic	8,880	3.64	10.30
Industrial	3,300	1.35	18.63
Mechanical	2,070	.85	7.55
Other, n.e.c	4,190	1.72	(1)
Scientists	1,700	.68	(1)
Chemists	240	.09	17.66
All other natural and mathematical scientists	210	.08	(1)
Systems analysts	1,250	.51	17.20
Technicians	19,650	8.04	(1)
Computer programmer	1,000	.41	11.46
Drafter	3,060	1.25	6.44
Electrical/electronic technicians	9,690	3.98	11.24
Mechanical engineering technicians	880	.36	10.06
Tool programmer, numerical controls	220	.09	13.47
Industrial engineering technicians	750	.30	22.12
All other engineering technicians	2,940	1.20	(1)
Science technicians	320	.13	19.38
All other technicians	790	.32	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Optical instruments and lenses (SIC 3830)

Field	Total	Percent of industry employment	Relative error
Total	8,130	24.57	(1)
Engineers	3,720	11.25	(1)
Electrical/electronic	1,770	5.36	14.90
Industrial	210	.63	25.60
Mechanical	780	2.36	28.21
Other, n.e.c	960	2.90	(1)
Scientists	280	.84	(1)
Chemists	100	.30	27.11
Systems analysts	180	.54	27.92
Technicians	4,130	12.48	(1)
Computer programmer	210	.63	18.10
Drafter	560	1.69	13.18
Electrical/electronic technicians	1,870	5.66	20.75
Mechanical engineering technicians	440	1.33	25.79
All other engineering technicians	830	2.51	(1)
All other technicians	220	.66	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Medical and dental instruments and supplies (SIC 3840)

Field	Total	Percent of industry employment	Relative error
Total	12,880	8.18	(1)
Engineers	3,190	2.02	(1)
Chemical	180	.11	14.30
Electrical/electronic	760	.48	11.33
Industrial	800	.51	6.76
Mechanical	1,000	.64	8.94
Other, n.e.c	450	.28	(1)
Scientists	1,340	.85	(1)
Chemists	680	.43	13.82
All other natural and mathematical scientists	270	.17	(1)
Systems analysts	390	.25	11.15
Technicians	8,350	5.31	(1)
Computer programmer	510	.32	11.63
Drafter	1,120	.71	8.61
Electrical/electronic technicians	2,210	1.41	10.48
Mechanical engineering technicians	500	.32	10.23
Tool programmer, numerical controls	70	.04	21.80
Industrial engineering technicians	220	.14	12.41
All other engineering technicians	320	.20	(1)
Science technicians	1,570	1.00	17.66
All other technicians	1,830	1.17	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Opthalmic goods (SIC 3850)

Field	Total	Percent of industry employment	Relative error
Total	1,050	2.28	(1)
Engineers	390	.85	(1)
Industrial	150	.33	28.92
Mechanical	120	.26	18.50
Other, n.e.c	120	.26	(1)
Technicians	660	1.43	(1)
Computer programmer	80	.17	27.81
Drafter	80	.17	28.84
Electrical/electronic technicians	60	.13	33.18
Mechanical engineering technicians	80	.17	29.69
All other engineering technicians	130	.28	(1)
All other technicians	230	.51	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Photographic equipment and supplies (SIC 3860)

Field	Total	Percent of industry employment	Relative error
Total	18,370	13.71	(1)
Engineers	5,660	4.22	(1)
Chemical	340	.25	12.90
Electrical/electronic	1,740	1.30	17.03
Industrial	790	.59	18.69
Mechanical	970	.72	16.68
Other, n.e.c	1,820	1.36	(1)
Scientists	1,210	.90	(1)
Chemists	340	.25	11.80
All other natural and mathematical scientists	480	.36	(1)
Systems analysts	390	.29	19.92
Technicians	11,500	8.59	(1)
Computer programmer	610	.45	16.43
Drafter	700	.52	10.34
Electrical/electronic technicians	890	.66	12.77
Mechanical engineering technicians	390	.29	24.72
Tool programmer, numerical controls	70	.05	16.31
Industrial engineering technicians	60	.04	18.16
All other engineering technicians	1,720	1.29	(1)
Science technicians	580	.43	14.75
All other technicians	6,480	4.86	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Watches, clocks, and parts (SIC 3870)

Field	Total	Percent of industry employment	Relative error
Total	570	2.39	(1)
Engineers	290	1.21	(1)
Industrial	150	.63	21.51
Mechanical	70	.29	26.11
Other, n.e.c	70	.29	(1)
Technicians	280	1.18	(1)
Drafter	70	.29	18.84
All other engineering technicians	120	.51	(1)
All other technicians	90	.38	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Jewelry, silverware, and plated ware (SIC 3910)

Field	Total	Percent of industry employment	Relative error
Total	550	0.97	(1)
Engineers	180	.32	(1)
Industrial	110	.20	13.48
Mechanical	70	.12	22.22
Scientists	70	.12	(1)
Systems analysts	70	.12	19.60
Technicians	300	.53	(1)
Computer programmer	110	.20	14.00
Engineering technicians	130	.23	(1)
All other technicians	60	.10	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Musical instruments (SIC 3930)

Field	Total	Percent of industry employment	Relative error
Total	1,090	5.13	(1)
Engineers	270	1.26	(1)
Industrial	120	.56	10.02
Mechanical	80	.37	12.21
Other, n.e.c	70	.33	(1)
Technicians	820	3.87	(1)
Drafter	130	.61	9.73
Electrical/electronic technicians	420	1.99	12.92
All other engineering technicians	140	.66	(1)
All other technicians	130	.61	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Toys and sporting goods (SIC 3940)

Field	Total	Percent of industry employment	Relative error
Total	3,020	2.50	(1)
Engineers	1,200	1.00	(1)
Industrial	500	.42	10.85
Mechanical	470	.39	7.86
Other, n.e.c	230	.19	(1)
Scientists	220	.17	(1)
Chemists	80	.06	14.14
Systems analysts	140	.11	9.94
Technicians	1,600	1.33	(1)
Computer programmer	240	.20	10.04
Drafter	310	.26	9.13
Electrical/electronic technicians	310	.26	15.44
All other engineering technicians	310	.26	(1)
Science technicians	80	.06	26.86
All other technicians	350	.29	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Pens, pencils, and office and art supplies (SIC 3950)

Field	Total	Percent of industry em-ployment	Relative error
Total	900	2.31	(1)
Engineers	330	.85	(1)
Industrial	110	.28	12.61
Mechanical	170	.44	11.17
Other, n.e.c.	50	.13	(1)
Scientists	120	.31	(1)
Chemists	120	.31	12.59
Technicians	450	1.15	(1)
Computer programmer	70	.18	10.16
Draftar	80	.20	12.73
All other engineering technicians	90	.23	(1)
Science technicians	110	.28	16.61
All other technicians	100	.26	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Costume jewelry and notions (SIC 3960)

Field	Total	Percent of industry employment	Relative error
Total	680	1.27	(1)
Engineers	250	.47	(1)
Industrial	110	.21	11.39
Mechanical	140	.26	21.30
Technicians	430	.80	(1)
Computer programmer	80	.15	8.62
Drafter	60	.11	16.78
All other engineering technicians	160	.30	(1)
All other technicians	130	.24	(1)

See footnotes at end of table.

TABLE C-3. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH MANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1980--con.

Miscellaneous manufactures (SIC 3990)

Field	Total	Percent of industry employment	Relative error
Total	3,930	2.83	(1)
Engineers	990	.71	(1)
Industrial	360	.26	12.91
Mechanical	430	.31	12.03
Other, n.e.c	200	.14	(1)
Scientists	270	.19	(1)
Chemists	140	.10	15.18
Systems analysts	130	.09	11.50
Technicians	2,670	1.93	(1)
Computer programmer	200	.14	17.16
Drafter	1,060	.77	11.74
Electrical/electronic technicians	570	.41	18.04
All other engineering technicians	290	.21	(1)
Science technicians	180	.13	19.56
All other technicians	370	.27	(1)

(1) Relative error was not computed.

NOTE: Because of rounding, components may not add to totals.

SOURCES: Bureau of Labor Statistics and the National Science Foundation.

TABLE C-4. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1981

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Total nonmanufacturing	973.9	100.0	226.2	100.0	288.2	100.0	459.5	100.0
Mining	97.3	10.0	31.8	14.1	34.9	12.1	30.6	6.7
Metallic minerals	8.5	.9	2.7	1.2	3.0	1.0	2.8	.6
Iron ores	1.0	.1	.1	.1	.6	.2	.2	(1)
Copper ores	2.6	.3	.6	.3	1.0	.3	1.0	.2
Lead and zinc ores	.5	(1)	.1	.1	.2	.1	.1	(1)
Gold and silver ores	.6	.1	.2	.1	.2	.1	.2	(1)
Bauxite and other aluminum ores	(1)	(1)	-	-	-	-	(1)	(1)
Ferroalloy ores, except vanadium	.6	.1	.1	(1)	.3	.1	.2	(1)
Metal mining services	1.5	.2	.8	.4	.3	.1	.4	.1
Miscellaneous metal ores	1.7	.2	.6	.3	.4	.2	.7	.1
Anthracite mining	(1)	(1)	-	-	-	-	(1)	(1)
Bituminous coal and lignite mining	6.6	.7	.8	.4	3.2	1.1	2.6	.6
Oil and gas extraction	78.8	8.1	27.7	12.2	27.4	9.5	23.7	5.2
Crude petroleum and natural gas	54.7	5.6	21.0	9.3	18.9	6.6	14.8	3.2
Natural gas liquids	.5	.1	.2	.1	.2	.1	.1	(1)
Oil and gas field services	23.6	2.4	6.5	2.9	8.3	2.9	8.8	1.9
Nonmetallic mining and quarrying	3.3	.3	.6	.3	1.2	.4	1.5	.3
Dimension stone	(1)	(1)	-	-	-	-	(1)	(1)
Crushed and broken stone	.4	(1)	.1	(1)	.2	.1	.1	(1)
Sand and gravel	.3	(1)	-	-	.2	.1	.1	(1)
Clay, ceramic, and refractory minerals	.8	.1	.1	(1)	.1	(1)	.5	.1
Chemical and fertilizer minerals	1.5	.2	.3	.1	.7	.2	.6	.1
Nonmetallic minerals (except fuels) services	.2	(1)	.1	.1	-	-	(1)	(1)
Miscellaneous nonmetallic minerals, except fuels	.2	(1)	-	-	.1	(1)	.1	(1)
Construction	91.7	9.4	.9	.4	50.3	17.4	40.5	8.8
General contractors and operative builders	19.6	2.0	.3	.2	11.0	3.8	8.2	1.8
Residential building construction	3.5	.4	-	-	1.1	.4	2.4	.5
Operative builders	.8	.1	.1	(1)	.2	.1	.6	.1
Nonresidential building construction	15.3	1.6	.3	.1	9.8	3.4	5.2	1.1
General contractors, except building	43.5	4.5	.6	.3	28.9	10.0	14.0	3.0
Highway and street construction	3.0	.3	-	-	1.7	.6	1.2	.3
Heavy construction, except highway and street	40.5	4.2	.6	.3	27.2	9.4	12.8	2.8
Special trade contractors	28.6	2.9	-	-	10.3	3.6	18.3	4.0
Plumbing, heating, and air conditioning	7.9	.8	-	-	4.0	1.4	3.9	.8
Painting, paper hanging, and decorating	.1	(1)	-	-	-	-	.1	(1)
Electrical work	13.9	1.4	-	-	3.8	1.3	10.1	2.2
Masonry, stonework, tile setting, and plastering	.6	.1	-	-	.3	.1	.3	.1

See footnotes at end of table.

TABLE C-4. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1981--con.

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Carpentering and flooring	0.4	(1)	-	-	-	-	0.4	0.1
Roofing and sheet-metal work	.4	(1)	-	-	-	-	.4	.1
Concrete work	.3	(1)	-	-	0.2	0.1	.1	(1)
Water-well drilling	.1	(1)	-	-	.1	(1)	(1)	(1)
Miscellaneous special trade contractors	4.9	0.5	-	-	2.0	.7	3.0	.7
Finance, insurance, and real estate	91.1	9.4	41.0	18.1	5.3	1.8	44.8	9.7
Banking	20.9	2.1	10.0	4.4	.3	.1	10.5	2.3
Federal Reserve Banks	1.3	.1	.7	.3	-	-	.6	.1
Commercial and stock savings banks	18.4	1.9	8.7	3.8	.3	.1	9.4	2.0
Mutual savings banks	.6	.1	.3	.1	-	-	.4	.1
Trust companies, nondeposit	(1)	(1)	-	-	-	-	(1)	(1)
Establishments closely related to banking	.5	.1	.3	.2	-	-	.2	(1)
Credit agencies other than banks	5.5	.6	2.4	1.0	-	-	3.1	.7
Rediscount and financing institutions	.1	(1)	.1	(1)	-	-	(1)	(1)
Savings and loan associations	2.8	.3	1.3	.6	-	-	1.5	.3
Agricultural credit institutions	.2	(1)	.1	(1)	-	-	.1	(1)
Personal credit institutions	1.4	.1	.5	.2	-	-	.8	.2
Business credit institutions	.4	(1)	.1	.1	-	-	.2	.1
Mortgage bankers and brokers	.5	.1	.2	.1	-	-	.3	.1
Security and commodity brokers and dealers	4.9	.5	2.7	1.2	.1	(1)	2.2	.5
Security brokers and dealers	3.2	.3	1.7	.7	.1	(1)	1.4	.3
Commodity contracts brokers and dealers	(1)	(1)	-	-	-	-	(1)	(1)
Security and commodity exchanges	.3	(1)	.2	.1	-	-	.1	(1)
Security and commodity services	1.4	.1	.8	.3	-	-	.6	.1
Insurance carriers	45.5	4.7	22.0	9.7	2.1	.7	21.5	4.7
Life insurance	19.1	2.0	9.8	4.3	.4	.1	9.0	2.0
Accident and health insurance, medical service plans	7.9	.8	4.6	2.0	.1	(1)	3.2	.7
Fire, marine, and casualty insurance	17.6	1.8	7.4	3.3	1.6	.5	8.6	1.9
Surety insurance	.1	(1)	-	-	-	-	.1	(1)
Title insurance	.4	(1)	-	-	-	-	.4	.1
Pension, health, and welfare funds	.4	(1)	.2	.1	-	-	.2	(1)
Insurance carriers, n.e.c.	(1)	(1)	-	-	-	-	(1)	(1)
Insurance agents, brokers, and services	5.3	.5	2.2	1.0	.8	.3	2.4	.5
Combined real estate, insurance, loan, law offices	(1)	(1)	-	-	-	-	(1)	(1)
Real estate	4.8	.5	.6	.3	1.4	.5	2.8	.6
Real estate operators and lessors	1.4	.1	.1	(1)	.7	.2	.7	.1
Real estate agents and managers	1.6	.2	.3	.2	.3	.1	1.0	.2
Title abstract offices	(1)	(1)	-	-	-	-	(1)	(1)

See footnotes at end of table.

TABLE C-4. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1981--con.

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Subdividers and developers	1.7	0.2	0.2	0.1	0.5	0.2	1.0	0.2
Holding and investment offices	4.2	.4	1.3	.6	.6	.2	2.3	.5
Holding offices	3.2	.3	.9	.4	.6	.2	1.7	.4
Investment offices	.1	(1)	.1	(1)	-	-	(1)	(1)
Trusts	.3	(1)	.1	(1)	-	-	.2	.1
Miscellaneous investing	.6	.1	.2	.1	-	-	.3	.1
Services	370.2	38.0	53.2	23.5	132.6	46.0	184.5	40.1
Hotels and other lodging places	2.7	.3	.2	.1	1.1	.4	1.4	.3
Hotels, motels, and tourist courts	2.6	.3	.2	.1	1.1	.4	1.3	.3
Rooming and boarding houses	-	-	-	-	-	-	-	-
Camps and trailer parks	(1)	(1)	-	-	-	-	(1)	(1)
Organization hotels and lodging houses	-	-	-	-	-	-	-	-
Personal services	.8	.1	.1	(1)	.2	.1	.5	.1
Laundry, cleaning, and garment services	.4	(1)	.1	(1)	.2	.1	.1	(1)
Photographic studios, portrait	.2	(1)	-	-	-	-	.2	(1)
Beauty shops	.1	(1)	-	-	-	-	.1	(1)
Barber shops	-	-	-	-	-	-	-	-
Shoe repair, shoe shine, and hat cleaning shops	(1)	(1)	-	-	-	-	(1)	(1)
Funeral service and crematories	.1	(1)	-	-	-	-	.1	(1)
Miscellaneous personal services	-	-	-	-	-	-	-	-
Business services	298.0	30.6	98.4	43.5	60.7	21.0	138.9	30.2
Advertising	.7	.1	.3	.1	-	-	.4	.1
Consumer credit reporting and collection agencies	.5	.1	.2	.1	-	-	.3	.1
Mailing, reproduction, commercial art, and stenography	1.4	.1	.3	.1	.1	(1)	1.0	.2
Services to dwellings and other buildings	.5	(1)	(1)	(1)	.2	.1	.2	.1
News syndicates	.4	(1)	(1)	(1)	(1)	(1)	.3	.1
Personnel supply services	20.1	2.1	1.1	.5	6.3	2.2	12.7	2.8
Computer and data processing services	100.5	10.3	39.9	17.6	4.7	1.6	55.9	12.2
Miscellaneous business services	173.8	17.8	56.5	25.0	49.3	17.1	68.0	14.8
Automobile repair, service, and garages	.7	.1	.2	.1	-	-	.6	.1
Automobile rentals and leasing, without drivers	.6	.1	.2	.1	-	-	.4	.1
Automobile parking	(1)	(1)	-	-	-	-	(1)	(1)
Automobile repair shops	.1	(1)	-	-	-	-	.1	(1)
Automobile services, except repair	-	-	-	-	-	-	-	-
Miscellaneous repair services	17.4	1.8	.2	.1	2.7	.9	14.5	3.2
Electrical repair shops	14.1	1.5	.2	.1	2.1	.7	11.8	2.6
Watch, clock, and jewelry repair	(1)	(1)	-	-	-	-	(1)	(1)
Reupholstery and furniture repair	(1)	(1)	-	-	-	-	(1)	(1)

See footnotes at end of table.

TABLE C-4. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1981--con.

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Miscellaneous repair shops and related services	3.2	0.3	-	-	0.6	0.2	2.7	0.6
Motion pictures	3.1	.3	0.1	0.1	.6	.2	2.4	.5
Motion picture production and services	2.7	.3	.1	.1	.5	.2	2.0	.4
Motion picture distribution and services	.2	(1)	-	-	-	-	.2	(1)
Motion picture theaters	.2	(1)	-	-	.1	(1)	.2	(1)
Amusement and recreation, except motion pictures	.9	.1	.1	(1)	.1	(1)	.8	.2
Dance halls, studios, and schools	(1)	(1)	-	-	-	-	(1)	(1)
Theatrical producers, bands, and entertainers	.4	(1)	-	-	-	-	.4	.1
Bowling alleys and billiard and pool establshments	(1)	(1)	-	-	-	-	(1)	(1)
Commercial sports	-	-	-	-	-	-	-	-
Miscellaneous amusement and recreation services	.6	.1	.1	(1)	.1	(1)	.4	.1
Health services	10.1	1.0	9.3	4.1	.2	.1	.7	.1
Offices of physicians	2.2	.2	2.0	.9	-	-	.2	(1)
Offices of dentists	-	-	-	-	-	-	-	-
Offices of osteopathic physicians	-	-	-	-	-	-	-	-
Offices of other health practitioners	1.8	.2	1.8	.8	-	-	-	-
Nursing and personal care facilities	.3	(1)	.2	.1	.2	.1	-	-
Medical and dental laboratories	.7	.1	.4	.2	-	-	.2	.1
Outpatient care facilities	4.8	.5	4.6	2.0	-	-	.2	(1)
Health and allied services, n.e.c	.3	(1)	.2	.1	-	-	.1	(1)
Legal services	1.7	.2	.6	.3	-	-	1.1	.2
Social services	8.0	.8	7.7	3.4	-	-	.3	.1
Individual and family social services	2.8	.3	2.8	1.3	-	-	-	-
Job training and vocational rehabilitation services	1.1	.1	1.0	.4	-	-	.2	(1)
Child day care services	.1	(1)	.1	.1	-	-	-	-
Residential care	1.5	.2	1.5	.7	-	-	-	-
Social services, n.e.c	2.4	.2	2.3	1.0	-	-	.2	(1)
Museums, art galleries, and zoos	-	-	-	-	-	-	-	-
Museums and art galleries	-	-	-	-	-	-	-	-
Arboreta, botanical, and zoological gardens	-	-	-	-	-	-	-	-
Membership organizations	6.0	.6	1.8	.8	.9	.3	3.3	.7
Business organizations	1.3	.1	.6	.3	.3	.1	.4	.1
Professional membership organizations	.5	.1	.2	.1	.2	.1	.2	(1)
Labor unions and similar labor organizations	.1	(1)	-	-	-	-	.1	(1)
Civic, social, and fraternal associations	.7	.1	.2	.1	.1	(1)	.5	.1
Political organizations	(1)	(1)	-	-	-	-	(1)	(1)
Religious organizations	3.0	.3	.7	.3	.4	.1	1.9	.4
Membership organizations, n.e.c	.3	(1)	.1	(1)	-	-	.2	.1

See footnotes at end of table.

TABLE C-4. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY MAJOR OCCUPATIONAL GROUP AND DETAILED INDUSTRY OF EMPLOYMENT: 1981--con.

[Numbers in thousands]

Industry	Scientists, engineers, and technicians							
	Total	Percent	Scientists	Percent	Engineers	Percent	Technicians	Percent
Miscellaneous services	344.3	35.4	33.8	14.9	131.5	45.6	179.1	39.0
Engineering, architectural, and surveying services	299.1	30.7	10.6	4.7	124.4	43.1	164.2	35.7
Noncommercial education and research organizations	31.7	3.3	15.0	6.6	6.5	2.3	10.2	2.2
Accounting, auditing, and bookkeeping services	7.6	.8	4.0	1.8	.2	.1	3.4	.7
Services, n.e.c	5.9	.6	4.2	1.8	.4	.1	1.3	.3

- No amount available.
(1) Value is less than .05 for numbers and less than .005 for percents.
NOTE: Because of rounding, components may not add to totals.
SOURCES: Bureau of Labor Statistics and the National Science Foundation.

TABLE C-5. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY DETAILED OCCUPATION AND BROAD INDUSTRY GROUP OF EMPLOYMENT: 1981

[Numbers in thousands]

Industry	Total	Scientists							Engineers					
		Total	Physical	Mathematical	Life	Social	Computer analyst	Other	Total	Aeronautical	Chemical	Civil	Elec/Electron	Mechanical
Total nonmanufacturing	973.9	226.2	54.7	18.5	13.8	35.0	104.0	0.2	288.2	3.3	9.8	70.4	61.0	50.4
Mining	97.3	31.8	26.6	.2	.4	-	4.6	.1	34.9	-	.7	.9	2.9	1.7
Metallic minerals	8.5	2.7	2.6	-	-	-	.1	-	3.0	-	-	-	-	.2
Anthracite mining	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-
Bituminous coal and lignite mining	6.6	.8	.4	-	-	-	.3	.1	3.2	-	-	.2	-	.1
Oil and gas extraction	78.8	27.7	23.0	.2	.4	-	4.2	-	27.4	-	.6	.7	2.9	1.4
Nonmetallic mining and quarrying	3.3	.6	.6	-	-	-	-	-	1.2	-	.1	-	-	.1
Construction	91.7	.9	-	-	-	-	.9	-	50.3	-	-	17.3	6.2	9.8
General contractors and operative builders	19.6	.3	-	-	-	-	.3	-	11.0	-	-	5.9	.7	2.9
General contractors, except building	43.5	.6	-	-	-	-	.6	-	28.9	-	-	9.8	2.1	3.2
Special trade contractors	28.6	-	-	-	-	-	-	-	10.3	-	-	1.7	3.4	4.6
Finance, insurance and real estate	91.1	41.0	.1	8.7	-	1.2	31.0	-	5.3	-	-	-	-	-
Banking	20.9	10.0	-	-	-	.6	9.4	-	.3	-	-	-	-	-
Credit agencies other than banks	5.5	2.4	-	-	-	-	2.4	-	-	-	-	-	-	-
Security and commodity brokers and dealers	4.9	2.7	-	.6	-	.2	1.8	-	.1	-	-	-	-	-
Insurance agents, brokers, and services	5.3	2.2	-	1.2	-	-	1.0	-	.8	-	-	-	-	-
Insurance carriers	45.5	22.0	-	6.5	-	.3	15.2	-	2.1	-	-	-	-	-
Real estate	4.8	.6	-	.2	-	-	.3	-	1.4	-	-	-	-	-
Combined real estate, insurance, loan, law offices	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-
Holding and investment offices	4.2	1.3	.1	.1	-	.1	1.0	-	.6	-	-	-	-	-
Services	693.9	152.4	28.0	9.7	13.4	33.7	67.5	.1	197.8	3.3	9.2	52.2	51.8	38.8
Hotels and other lodging places	2.7	.2	-	-	-	-	.2	-	1.1	-	-	-	-	-
Personal services	.8	.1	-	-	-	-	.1	-	.2	-	-	-	-	-
Business services	298.0	98.4	17.9	5.1	7.4	12.7	55.2	-	60.7	1.5	3.9	3.0	22.4	8.5
Automobile repair, service, and garages	.7	.2	-	-	-	-	.2	-	-	-	-	-	-	-
Miscellaneous repair services	17.4	.2	-	-	-	-	.2	-	2.7	-	-	-	2.5	-

See footnotes at end of table.

TABLE C-5. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY DETAILED OCCUPATION AND BROAD INDUSTRY GROUP OF EMPLOYMENT: 1981--con.

[Numbers in thousands]

Industry	Total	Scientists							Engineers					
		Total	Physical	Mathematical	Life	Social	Computer analyst	Other	Total	Aeronautical	Chemical	Civil	Elec/Electron	Mechanical
Motion pictures................	3.1	0.1	-	-	-	-	0.1	-	0.6	-	-	-	0.6	-
Amusement and recreation, except motion pictures.........	.9	.1	-	-	-	-	.1	-	.1	-	-	-	.1	-
Health services................	10.1	9.3	0.1	-	0.4	8.4	.3	-	.2	-	-	-	-	-
Legal services.................	1.7	.6	-	-	-	-	.6	-	-	-	-	-	-	-
Social services................	8.0	7.7	-	0.6	-	7.0	.1	-	-	-	-	-	-	-
Museums, art galleries, and zoos..........................	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Membership organizations.......	6.0	1.8	-	.5	-	.3	.9	0.1	.9	-	-	-	.5	-
Miscellaneous services.........	344.3	33.8	10.0	3.5	5.5	5.3	9.5	-	131.5	1.8	5.2	49.2	25.8	30.2

See footnotes at end of table.

TABLE C-5. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY DETAILED OCCUPATION AND BROAD INDUSTRY GROUP OF EMPLOYMENT: 1981--con.

[Numbers in thousands]

Industry	Engineers		Technicians						
	Industrial	Other	Total	Programmer	Drafter	Engineering	Science	Unspecified	Other
Total nonmanufacturing	6.1	87.2	459.5	119.1	147.9	167.7	22.0	1.7	2.9
Mining	.3	28.2	30.6	3.4	6.6	14.8	5.3	.4	.4
Metallic minerals	.1	2.7	2.8	.1	.4	1.4	.9	(1)	(1)
Anthracite mining	-	-	(1)	-	-	-	-	(1)	(1)
Bituminous coal and lignite mining	.2	2.7	2.6	.3	.6	1.3	.4	-	-
Oil and gas extraction	-	21.8	23.7	3.0	5.5	11.9	3.3	-	-
Nonmetallic mining and quarrying	.1	1.0	1.5	-	.1	.3	.8	.4	.4
Construction	-	16.9	40.5	1.4	20.1	19.0	-	(1)	(1)
General contractors and operative builders	-	2.4	8.2	.6	5.8	1.8	-	-	-
General contractors, except building	-	13.8	14.0	.8	6.7	6.5	-	-	-
Special trade contractors	-	.6	18.3	-	7.5	10.7	-	(1)	(1)
Finance, insurance and real estate	-	5.3	44.8	40.1	2.2	1.4	.6	.5	.5
Banking	-	.3	10.5	9.9	-	.4	.2	(1)	(1)
Credit agencies other than banks	-	-	3.1	3.1	-	-	-	(1)	(1)
Security and commodity brokers and dealers	-	.1	2.2	2.0	-	-	-	.1	.1
Insurance agents, brokers, and services	-	.8	2.4	2.1	.3	-	-	-	-
Insurance carriers	-	2.1	21.5	20.5	.3	.2	.4	.1	.1
Real estate	-	1.4	2.8	.7	1.6	.4	-	-	-
Combined real estate, insurance, loan, law offices	-	-	(1)	-	-	-	-	(1)	(1)
Holding and investment offices	-	.6	2.3	1.7	-	.4	-	.2	.2
Services	5.8	36.8	343.6	74.1	119.0	132.5	16.0	.7	1.9
Hotels and other lodging places	-	1.1	1.4	.4	-	1.0	-	(1)	(1)
Personal services	-	.2	.5	.1	-	-	-	.4	.4
Business services	3.2	18.0	138.9	60.3	19.0	51.1	8.5	-	-
Automobile repair, service, and garages	-	-	.6	.6	-	-	-	(1)	(1)
Miscellaneous repair services	-	.2	14.5	.1	.5	13.9	-	(1)	(1)

See footnotes at end of table.

TABLE C-5. SCIENTISTS, ENGINEERS, AND TECHNICIANS IN NONMANUFACTURING INDUSTRIES BY DETAILED OCCUPATION AND BROAD INDUSTRY GROUP OF EMPLOYMENT: 1981--con.

[Numbers in thousands]

Industry	Engineers		Technicians						
	Industrial	Other	Total	Programmer	Drafter	Engineering	Science	Unspecified	Other
Motion pictures	-	-	2.4	0.2	-	0.8	-	0.2	1.4
Amusement and recreation, except motion pictures	-	-	.8	.1	-	.7	-	(1)	(1)
Health services	-	0.2	.7	.6	-	-	0.1	-	-
Legal services	-	-	1.1	1.1	-	-	-	-	-
Social services	-	-	.3	.2	-	.1	-	-	-
Museums, art galleries, and zoos	-	-	-	-	-	-	-	-	-
Membership organizations	-	.4	3.3	2.0	-	1.0	.2	(1)	(1)
Miscellaneous services	2.5	16.7	179.1	8.4	99.6	63.9	7.2	-	-

- No amount available.
(1) Value is less then .05.
NOTE: Because of rounding, components may not add to totals.
SOURCES: Bureau of Labor Statistics and the National Science Foundation.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981

Iron ores (SIC 1010)

Field	Total	Percent of industry employment	Relative error
Total	970	4.31	(1)
Engineers	600	2.67	(1)
Mechanical	80	.35	30.74
Metallurgists and metallurgical	70	.31	30.32
Mining	120	.53	17.89
Other, n.e.c.	330	1.48	(1)
Scientists	150	.66	(1)
Chemists	90	.40	35.98
Earth scientists	60	.26	23.47
Technicians	220	.98	(1)
Engineering technicians	220	.98	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Copper ores (SIC 1020)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	2,600	7.07	(1)
Engineers	960	2.60	(1)
Industrial	100	.27	9.25
Mechanical	80	.21	6.28
Metallurgists and metallurgical	180	.49	3.04
Mining	280	.76	2.96
Safety	100	.27	4.58
Other, n.e.c	220	.60	(1)
Scientists	630	1.71	(1)
Chemists	190	.52	4.71
Earth scientists	320	.87	6.70
Systems analysts	120	.32	6.00
Technicians	1,010	2.76	(1)
Computer programmer	110	.30	3.65
Drafter	150	.41	3.61
Surveyor	110	.30	3.52
All other engineering technicians	180	.49	(1)
Science technicians	460	1.26	5.37

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Lead and zinc ores (SIC 1030)

Field	Total	Percent of industry employment	Relative error
Total	470	7.12	(1)
Engineers	210	3.18	(1)
Mining	80	1.21	1.81
Other, n.e.c	130	1.97	(1)
Scientists	130	1.97	(1)
Earth scientists	130	1.97	10.18
Technicians	130	1.97	(1)
Engineering technicians	130	1.97	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Gold and silver ores (SIC 1040)

Field	Total	Percent of industry employment	Relative error
Total	610	6.31	(1)
Engineers	210	2.17	(1)
Metallurgists and metallurgical	70	.72	17.73
Mining	140	1.45	13.21
Scientists	230	2.38	(1)
Chemists	90	.93	46.63
Earth scientists	140	1.45	15.57
Technicians	170	1.76	(1)
Surveyor	80	.83	20.67
All other engineering technicians	90	.93	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Bauxite and other aluminum ores (SIC 1050)

Field	Total	Percent of industry employment	Relative error
Total	10	2.48	(1)
Technicians	10	2.48	(1)
Field unspecified	10	2.48	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Ferroalloy ores, except vanadium (SIC 1060)

Field	Total	Percent of industry employment	Relative error
Total	570	7.21	(1)
Engineers	300	3.80	(1)
Metallurgists and metallurgical	60	.76	22.50
Mining	80	1.01	13.25
Other, n.e.c.	160	2.03	(1)
Scientists	80	1.01	(1)
Earth scientists	80	1.01	13.46
Technicians	190	2.40	(1)
Engineering technicians	140	1.77	(1)
Science technicians	50	.63	29.35

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Metal mining services (SIC 1080)

Field	Total	Percent of industry employment	Relative error
Total	1,490	23.93	(1)
Engineers	290	4.65	(1)
Metallurgists and metallurgical	70	1.12	22.43
Mining	160	2.57	14.37
Other, n.e.c	60	.96	(1)
Scientists	830	13.35	(1)
Earth scientists	830	13.35	10.16
Technicians	370	5.93	(1)
Drafter	150	2.41	11.06
All other engineering technicians	110	1.76	(1)
Science technicians	110	1.76	24.17

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Miscellaneous metal ores (SIC 1090)

Field	Total	Percent of industry employment	Relative error
Total	1,740	11.01	(1)
Engineers	440	2.78	(1)
Metallurgists and metallurgical	50	.31	15.38
Mining	180	1.14	10.91
Safety	90	.57	9.72
Other, n.e.c	120	.76	(1)
Scientists	630	3.99	(1)
Chemists	90	.57	13.30
Earth scientists	540	3.42	12.05
Technicians	670	4.24	(1)
Drafter	120	.76	10.30
Surveyor	120	.76	11.23
All other engineering technicians	180	1.14	(1)
Science technicians	250	1.58	10.30

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Anthracite mining (SIC 1110)

Field	Total	Percent of industry em-ploy-ment	Relative error
Total	30	0.83	(1)
Technicians	30	.83	(1)
Field unspecified	30	.83	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Bituminous coal and lignite mining (SIC 1210)

Field	Total	Percent of industry employment	Relative error
Total	6,600	2.79	(1)
Engineers	3,170	1.35	(1)
Civil	210	.09	15.08
Industrial	190	.08	18.65
Mechanical	90	.03	24.04
Mining	1,440	.62	10.26
Safety	790	.34	7.44
Other, n.e.c	450	.19	(1)
Scientists	810	.33	(1)
Chemists	230	.09	19.75
Earth scientists	220	.09	26.07
All other natural and mathematical scientists	100	.04	(1)
Systems analysts	260	.11	19.69
Technicians	2,620	1.11	(1)
Computer programmer	320	.13	21.49
Drafter	620	.26	10.33
Surveyor	670	.29	8.28
Industrial engineering technicians	120	.05	36.36
All other engineering technicians	470	.20	(1)
Science technicians	420	.18	20.26

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Crude petroleum and natural gas (SIC 1310)

Field	Total	Percent of industry employment	Relative error
Total	54,720	21.77	(1)
Engineers	18,910	7.53	(1)
Chemical	610	.24	28.46
Civil	640	.25	30.36
Electrical/electronic	1,190	.47	32.67
Mechanical	710	.28	21.27
Petroleum	13,520	5.40	12.85
Safety	360	.14	49.31
Other, n.e.c	1,880	.75	(1)
Scientists	21,020	8.37	(1)
Mathematical scientists	170	.06	27.30
Chemists	1,140	.45	39.94
Earth scientists	15,520	6.20	10.82
All other physical scientists	220	.08	(1)
Life scientists	360	.14	48.31
Systems analysts	3,610	1.44	22.58
Technicians	14,790	5.87	(1)
Computer programmer	1,560	.62	18.25
Computer, prospecting and/or computer, seismograph	440	.17	25.85
Drafter	3,960	1.58	11.94
Electrical/electronic technicians	1,120	.44	34.33
Observer, electrical prospecting and/or gravity prospecting	290	.11	45.13
Scout	480	.19	25.68
Surveyor	630	.25	36.37
Civil engineering technicians	340	.13	38.04
All other engineering technicians	3,610	1.44	(1)
Science technicians	2,360	.94	26.52

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Natural gas liquids (SIC 1320)

Field	Total	Percent of industry employment	Relative error
Total	550	8.06	(1)
Engineers	210	3.08	(1)
Petroleum	210	3.08	17.65
Scientists	220	3.23	(1)
Earth scientists	220	3.23	22.39
Technicians	120	1.75	(1)
Drafter	50	.73	28.92
All other engineering technicians	70	1.02	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Oil and gas field services (SIC 1380)

Field	Total	Percent of industry employment	Relative error
Total	23,580	5.65	(1)
Engineers	8,330	2.00	(1)
Civil	100	.02	26.57
Electrical/electronic	1,740	.42	28.60
Mechanical	660	.16	31.29
Petroleum	4,700	1.14	14.81
Safety	320	.07	16.84
Other, n.e.c	810	.19	(1)
Scientists	6,460	1.55	(1)
Chemists	100	.02	49.91
Earth scientists	5,620	1.36	24.76
All other physical scientists	140	.03	(1)
Systems analysts	600	.14	28.00
Technicians	8,790	2.10	(1)
Computer programmer	1,010	.24	34.24
Drafter	1,480	.36	16.70
Electrical/electronic technicians	1,440	.35	21.15
Observer, electrical prospecting and/or gravity prospecting	980	.23	31.49
Surveyor	1,000	.24	32.46
Mechanical engineering technicians	520	.12	44.62
All other engineering technicians	1,460	.35	(1)
Science technicians	900	.21	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Dimension stone (SIC 1410)

Field	Total	Percent of industry employment	Relative error
Total	20	0.58	(1)
Technicians	20	.58	(1)
Field unspecified	20	.58	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Crushed and broken stone (SIC 1420)

Field	Total	Percent of industry employment	Relative error
Total	390	0.97	(1)
Engineers	180	.45	(1)
Field unspecified	180	.45	(1)
Scientists	70	.17	(1)
Physical scientists	70	.17	(1)
Technicians	140	.35	(1)
Field unspecified	140	.35	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Sand and gravel (SIC 1440)

Field	Total	Percent of industry employment	Relative error
Total	290	0.80	(1)
Engineers	170	.47	(1)
Mining	80	.22	15.05
Other, n.e.c	90	.25	(1)
Technicians	120	.33	(1)
Field unspecified	120	.33	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Clay, ceramic, and refractory minerals (SIC 1450)

Field	Total	Percent of industry employment	Relative error
Total	760	7.88	(1)
Engineers	140	1.45	(1)
Field unspecified	140	1.45	(1)
Scientists	80	.83	(1)
Physical scientists	80	.83	(1)
Technicians	540	5.60	(1)
Engineering technicians	90	.93	(1)
Science technicians	450	4.67	7.52

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Chemical and fertilizer minerals (SIC 1470)

Field	Total	Percent of industry employment	Relative error
Total	1,540	5.55	(1)
Engineers	660	2.37	(1)
Chemical	70	.25	15.04
Industrial	60	.21	17.28
Mechanical	120	.43	15.59
Mining	150	.54	7.37
Safety	70	.25	7.82
Other, n.e.c	190	.69	(1)
Scientists	300	1.08	(1)
Chemists	170	.61	12.65
Earth scientists	130	.47	16.01
Technicians	580	2.10	(1)
Drafter	80	.29	9.50
All other engineering technicians	180	.65	(1)
Science technicians	320	1.16	14.37

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Nonmetallic minerals (except fuels) services (SIC 1480)

Field	Total	Percent of industry employment	Relative error
Total	160	14.47	(1)
Scientists	150	13.57	(1)
Earth scientists	150	13.57	30.29
Technicians	10	.90	(1)
Field unspecified	10	.90	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Miscellaneous nonmetallic minerals, except fuels (SIC 1490)

Field	Total	Percent of industry employment	Relative error
Total	170	2.58	(1)
Engineers	100	1.52	(1)
Mining	50	.76	15.71
Other, n.e.c.	50	.76	(1)
Technicians	70	1.06	(1)
Field unspecified	70	1.06	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Residential building construction (SIC 1520)

Field	Total	Percent of industry employment	Relative error
Total	3,510	0.64	(1)
Engineers	1,060	.19	(1)
Civil	810	.15	24.34
Other, n.e.c	250	.04	(1)
Technicians	2,450	.45	(1)
Computer programmer	60	.01	48.24
Drafter	2,200	.41	14.06
All other engineering technicians	190	.03	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Operative builders (SIC 1530)

Field	Total	Percent of industry employment	Relative error
Total	810	1.27	(1)
Engineers	180	.28	(1)
Civil	180	.28	23.64
Scientists	60	.09	(1)
Systems analysts	60	.09	24.30
Technicians	570	.90	(1)
Computer programmer	90	.14	21.57
Drafter	360	.57	16.06
All other engineering technicians	120	.19	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Nonresidential building construction (SIC 1540)

Field	Total	Percent of industry employment	Relative error
Total	15,260	2.93	(1)
Engineers	9,770	1.90	(1)
Civil	4,880	.95	7.86
Electrical/electronic	720	.14	17.60
Mechanical	1,990	.39	14.71
Safety	280	.05	11.32
Other, n.e.c.	1,900	.37	(1)
Scientists	280	.05	(1)
Systems analysts	280	.05	13.98
Technicians	5,210	.98	(1)
Computer programmer	450	.08	11.05
Drafter	3,240	.63	7.26
Electrical/electronic technicians	80	.01	45.90
Surveyor	490	.09	11.74
Mechanical engineering technicians	220	.04	29.70
Civil engineering technicians	380	.07	19.11
All other engineering technicians	350	.06	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Highway and street construction (SIC 1610)

Field	Total	Percent of industry employment	Relative error
Total	2,970	1.07	(1)
Engineers	1,740	.63	(1)
Civil	1,440	.53	8.65
Safety	180	.06	8.99
Other, n.e.c	120	.04	(1)
Technicians	1,230	.44	(1)
Computer programmer	150	.05	17.04
Drafter	140	.05	14.99
Surveyor	750	.28	6.67
Civil engineering technicians	110	.04	17.26
All other engineering technicians	80	.02	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Heavy construction, except highway and street (SIC 1620)

Field	Total	Percent of industry employment	Relative error
Total	40,520	6.01	(1)
Engineers	27,170	4.04	(1)
Civil	8,320	1.24	8.85
Electrical/electronic	2,130	.31	18.40
Mechanical	3,210	.48	15.24
Safety	750	.11	8.35
Nuclear	400	.05	46.21
Other, n.e.c	12,360	1.85	(1)
Scientists	570	.08	(1)
Systems analysts	570	.08	15.74
Technicians	12,780	1.89	(1)
Computer programmer	630	.09	14.60
Drafter	6,590	.98	17.63
Electrical/electronic technicians	760	.11	28.39
Surveyor	2,070	.31	12.23
Mechanical engineering technicians	670	.10	25.98
Civil engineering technicians	720	.10	23.76
All other engineering technicians	1,340	.20	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Plumbing, heating, and air conditioning (SIC 1710)

Field	Total	Percent of industry employment	Relative error
Total	7,880	1.52	(1)
Engineers	4,010	.77	(1)
Mechanical	3,830	.74	7.14
Other, n.e.c	180	.03	(1)
Technicians	3,870	.75	(1)
Drafter	3,710	.72	5.31
All other engineering technicians	160	.03	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Painting, paper hanging, and decorating (SIC 1720)

Field	Total	Percent of industry employment	Relative error
Total	100	0.07	(1)
Technicians	100	.07	(1)
Engineering technicians	100	.07	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Electrical work (SIC 1730)

Field	Total	Percent of industry employment	Relative error
Total	13,940	3.39	(1)
Engineers	3,820	.92	(1)
Civil	220	.05	26.53
Electrical/electronic	3,380	.82	12.73
Mechanical	220	.05	32.15
Technicians	10,120	2.47	(1)
Drafter	500	.12	19.38
Electrical/electronic technicians	9,400	2.30	11.06
All other engineering technicians	220	.05	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Masonry, stonework, tile setting, and plastering (SIC 1740)

Field	Total	Percent of industry employment	Relative error
Total	560	0.16	(1)
Engineers	260	.07	(1)
Civil	140	.04	42.39
Other, n.e.c	120	.03	(1)
Technicians	300	.09	(1)
Drafter	300	.09	23.57

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Carpentering and flooring (SIC 1750)

Field	Total	Percent of industry employment	Relative error
Total	380	0.30	(1)
Technicians	380	.30	(1)
Drafter	380	.30	24.07

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Roofing and sheet-metal work (SIC 1760

Field	Total	Percent of industry employment	Relative error
Total	360	0.23	(1)
Technicians	360	.23	(1)
Drafter	360	.23	16.97

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Concrete work (SIC 1770)

Field	Total	Percent of industry employment	Relative error
Total	350	0.30	(1)
Engineers	210	.18	(1)
Civil	140	.12	23.87
Other, n.e.c	70	.06	(1)
Technicians	140	.12	(1)
Drafter	140	.12	21.55

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Water-well drilling (SIC 1780)

Field	Total	Percent of industry employment	Relative error
Total	100	0.51	(1)
Engineers	80	.41	(1)
Field unspecified	80	.41	(1)
Technicians	20	.10	(1)
Field unspecified	20	.10	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Miscellaneous special trade contractors (SIC 1790)

Field	Total	Percent of industry employment	Relative error
Total	4,950	1.19	(1)
Engineers	1,960	.46	(1)
Civil	1,160	.28	12.79
Mechanical	600	.14	21.57
Other, n.e.c	200	.04	(1)
Technicians	2,990	.73	(1)
Drafter	2,160	.53	10.67
All other engineering technicians	830	.20	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Federal Reserve Banks (SIC 6010)

Field	Total	Percent of industry employment	Relative error
Total	1,270	5.17	(1)
Scientists	710	2.89	(1)
Economists	310	1.26	15.07
Systems analysts	400	1.63	7.95
Technicians	560	2.28	(1)
Computer programmer	560	2.28	7.48

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1931--con

Commercial and stock savings banks (SIC 6020)

Field	Total	Percent of industry employment	Relative error
Total	18,410	1.22	(1)
Engineers	340	.02	(1)
Field unspecified	340	.02	(1)
Scientists	8,700	.58	(1)
Economists	320	.02	17.19
Systems analysts	8,380	.56	18.40
Technicians	9,370	.62	(1)
Computer programmer	8,790	.59	10.11
Engineering technicians	360	.02	(1)
Mathematical technicians	220	.01	36.77

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Mutual savings banks (SIC 6030)

Field	Total	Percent of industry employment	Relative error
Total	620	0.82	(1)
Scientists	260	.34	(1)
Systems analysts	260	.34	12.55
Technicians	360	.48	(1)
Computer programmer	360	.48	8.46

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Trust companies, nondeposit (SIC 6040)

Field	Total	Percent of industry employment	Relative error
Total	30	1.20	(1)
Technicians	30	1.20	(1)
Field unspecified	30	1.20	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Establishments closely related to banking (SIC 6050)

Field	Total	Percent of industry employment	Relative error
Total	540	1.27	(1)
Scientists	340	.80	(1)
Systems analysts	340	.80	37.81
Technicians	200	.47	(1)
Computer programmer	200	.47	27.90

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Rediscount and financing institutions (SIC 6110)

Field	Total	Percent of industry employment	Relative error
Total	110	3.57	(1)
Scientists	70	2.27	(1)
Systems analysts	70	2.27	10.46
Technicians	40	1.30	(1)
Field unspecified	40	1.30	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Savings and loan associations (SIC 6120)

Field	Total	Percent of industry employment	Relative error
Total	2,800	1.04	(1)
Scientists	1,270	.47	(1)
Systems analysts	1,270	.47	8.23
Technicians	1,530	.57	(1)
Computer programmer	1,530	.57	7.05

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Agricultural credit institutions (SIC 6130)

Field	Total	Percent of industry employment	Relative error
Total	220	1.26	(1)
Scientists	100	.57	(1)
Systems analysts	100	.57	26.78
Technicians	120	.69	(1)
Computer programmer	120	.69	12.99

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Personal credit institutions (SIC 6140)

Field	Total	Percent of industry em-ploy-ment	Relative error
Total	1,400	0.67	(1)
Scientists	550	.26	(1)
Systems analysts	550	.26	12.24
Technicians	850	.41	(1)
Computer programmer	850	.41	9.11

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Business credit institutions (SIC 6150)

Field	Total	Percent of industry employment	Relative error
Total	380	1.15	(1)
Scientists	140	.42	(1)
Systems analysts	140	.42	25.29
Technicians	240	.73	(1)
Computer programmer	240	.73	19.67

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Mortgage bankers and brokers (SIC 6160)

Field	Total	Percent of industry employment	Relative error
Total	550	0.88	(1)
Scientists	230	.37	(1)
Systems analysts	230	.37	18.76
Technicians	320	.51	(1)
Computer programmer	320	.51	10.21

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Security brokers and dealers (SIC 6210)

Field	Total	Percent of industry employment	Relative error
Total	3,180	1.45	(1)
Engineers	80	.03	(1)
Field unspecified	80	.03	(1)
Scientists	1,670	.76	(1)
Statisticians	340	.15	34.11
Economists	150	.06	22.10
Systems analysts	1,180	.55	24.53
Technicians	1,430	.66	(1)
Computer programmer	1,430	.66	23.90

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Commodity contracts brokers and dealers (SIC 6220)

Field	Total	Percent of industry employment	Relative error
Total	40	0.32	(1)
Technicians	40	.32	(1)
Field unspecified	40	.32	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Security and commodity exchanges (SIC 6230)

Field	Total	Percent of industry employment	Relative error
Total	310	4.57	(1)
Scientists	220	3.24	(1)
Mathematical scientists	70	1.03	(1)
Social scientists	70	1.03	(1)
Systems analysts	80	1.18	12.75
Technicians	90	1.33	(1)
Field unspecified	90	1.33	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Security and commodity services (SIC 6280)

Field	Total	Percent of industry employment	Relative error
Total	1,390	4.95	(1)
Scientists	770	2.74	(1)
Statisticians	220	.78	21.29
Systems analysts	550	1.96	15.77
Technicians	620	2.21	(1)
Computer programmer	620	2.21	29.38

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Life insurance (SIC 6310)

Field	Total	Percent of industry employment	Relative error
Total	19,110	3.48	(1)
Engineers	380	.07	(1)
Field unspecified	380	.07	(1)
Scientists	9,760	1.78	(1)
Actuaries	2,980	.54	9.19
Statisticians	670	.12	40.71
All other mathematicians	120	.02	(1)
Economists	70	.01	32.06
Systems analysts	5,920	1.09	9.71
Technicians	8,970	1.63	(1)
Computer programmer	8,560	1.57	9.26
Engineering technicians	200	.03	(1)
Mathematical technicians	210	.03	18.84

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Accident and health insurance, medical service plans (SIC 6320)

Field	Total	Percent of industry employment	Relative error
Total	7,890	5.48	(1)
Engineers	110	.07	(1)
Field unspecified	110	.07	(1)
Scientists	4,600	3.19	(1)
Actuaries	500	.35	10.90
Statisticians	270	.18	10.40
All other mathematicians	120	.08	(1)
Economists	70	.04	30.12
Systems analysts	3,640	2.54	7.78
Technicians	3,180	2.22	(1)
Computer programmer	3,090	2.16	6.89
Mathematical technicians	90	.06	32.44

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Fire, marine, and casualty insurance (SIC 6330)

Field	Total	Percent of industry employment	Relative error
Total	17,630	3.66	(1)
Engineers	1,570	.33	(1)
Field unspecified	1,570	.33	(1)
Scientists	7,420	1.53	(1)
Actuaries	970	.20	10.98
Statisticians	440	.09	12.91
All other mathematicians	330	.06	(1)
Social scientists	120	.02	(1)
Systems analysts	5,560	1.16	12.97
Technicians	8,640	1.80	(1)
Computer programmer	8,490	1.78	11.04
Drafter	70	.01	31.48
Mathematical technicians	80	.01	26.89

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Surety insurance (SIC 6350)

Field	Total	Percent of industry employment	Relative error
Total	60	0.97	(1)
Technicians	60	.97	(1)
Field unspecified	60	.97	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Title insurance (SIC 6360)

Field	Total	Percent of industry employment	Relative error
Total	400	0.88	(1)
Technicians	400	.88	(1)
Computer programmer	200	.44	26.64
Drafter	200	.44	28.63

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Pension, health, and welfare funds (SIC 6370)

Field	Total	Percent of industry employment	Relative error
Total	390	1.80	(1)
Scientists	190	.88	(1)
Actuaries	80	.37	34.62
Systems analysts	110	.51	24.33
Technicians	200	.92	(1)
Computer programmer	200	.92	16.61

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Insurance carriers, n.e.c. (SIC 6390)

Field	Total	Percent of industry employment	Relative error
Total	10	0.67	(1)
Technicians	10	.67	(1)
Field unspecified	10	.67	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Real estate operators and lessors (SIC 6510)

Field	Total	Percent of industry employment	Relative error
Total	1,430	0.28	(1)
Engineers	680	.14	(1)
Field unspecified	680	.14	(1)
Scientists	70	.01	(1)
Systems analysts	70	.01	23.56
Technicians	680	.13	(1)
Computer programmer	90	.01	27.69
Drafter	390	.08	24.03
All other engineering technicians	200	.04	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Real estate agents and managers (SIC 6530)

Field	Total	Percent of industry employment	Relative error
Total	1,640	0.42	(1)
Engineers	280	.07	(1)
Field unspecified	280	.07	(1)
Scientists	350	.09	(1)
Mathematical scientists	150	.04	(1)
Systems analysts	200	.05	29.23
Technicians	1,010	.26	(1)
Computer programmer	310	.08	42.74
Drafter	620	.16	23.42
All other engineering technicians	80	.02	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Title abstract offices (SIC 6540)

Field	Total	Percent of industry employment	Relative error
Total	50	0.24	(1)
Technicians	50	.24	(1)
Engineering technicians	50	.24	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Subdividers and developers (SIC 6550)

Field	Total	Percent of industry employment	Relative error
Total	1,670	1.19	(1)
Engineers	460	.33	(1)
Field unspecified	460	.33	(1)
Scientists	170	.12	(1)
Mathematical scientists	100	.07	(1)
Systems analysts	70	.05	20.30
Technicians	1,040	.74	(1)
Computer programmer	350	.25	34.54
Drafter	610	.44	19.33
Surveyor	80	.05	28.03

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Holding offices (SIC 6710)

Field	Total	Percent of industry employment	Relative error
Total	3,170	5.70	(1)
Engineers	580	1.04	(1)
Field unspecified	580	1.04	(1)
Scientists	900	1.62	(1)
Economists	70	.12	17.86
Systems analysts	830	1.50	12.24
Technicians	1,690	3.04	(1)
Computer programmer	1,410	2.54	12.27
Engineering technicians	280	.50	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Investment offices (SIC 6720)

Field	Total	Percent of industry employment	Relative error
Total	120	2.52	(1)
Scientists	70	1.47	(1)
Social scientists	70	1.47	(1)
Technicians	50	1.05	(1)
Computer programmer	50	1.05	14.10

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Trusts (SIC 6730)

Field	Total	Percent of industry employment	Relative error
Total	340	0.84	(1)
Scientists	110	.27	(1)
Mathematical scientists	110	.27	(1)
Technicians	230	.57	(1)
Field unspecified	230	.57	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Miscellaneous investing (SIC 6790)

Field	Total	Percent of industry employment	Relative error
Total	560	2.70	(1)
Scientists	210	1.01	(1)
Physical scientists	80	.38	(1)
Systems analysts	130	.63	44.04
Technicians	350	1.69	(1)
Computer programmer	230	1.11	36.93
Engineering technicians	120	.58	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Hotels, motels, and tourist courts (SIC 7010)

Field	Total	Percent of industry employment	Relative error
Total	2,650	0.22	(1)
Engineers	1,090	.09	(1)
Field unspecified	1,090	.09	(1)
Scientists	230	.02	(1)
Systems analysts	230	.02	23.51
Technicians	1,330	.11	(1)
Computer programmer	370	.03	21.96
Engineering technicians	960	.08	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Camps and trailer parks (SIC 7030)

Field	Total	Percent of industry employment	Relative error
Total	40	0.18	(1)
Technicians	40	.13	(1)
Field unspecified	40	.18	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Laundry, cleaning, and garment services (SIC 7210)

Field	Total	Percent of industry employment	Relative error
Total	360	0.09	(1)
Engineers	180	.05	(1)
Field unspecified	180	.05	(1)
Scientists	80	.02	(1)
Systems analysts	80	.02	19.48
Technicians	100	.02	(1)
Computer programmer	100	.02	25.38

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Photographic studios, portrait (SIC 7220)

Field	Total	Percent of industry employment	Relative error
Total	200	0.45	(1)
Technicians	200	.45	(1)
Field unspecified	200	.45	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Beauty shops (SIC 7230)

Field	Total	Percent of industry employment	Relative error
Total	100	0.03	(1)
Technicians	100	.03	(1)
Field unspecified	100	.03	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Shoe repair, shoe shine, and hat cleaning shops (SIC 7250)

Field	Total	Percent of industry employment	Relative error
Total	10	0.14	(1)
Technicians	10	.14	(1)
Field unspecified	10	.14	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Funeral service and crematories (SIC 7260)

Field	Total	Percent of industry employment	Relative error
Total	140	0.19	(1)
Technicians	140	.19	(1)
Field unspecified	140	.19	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Advertising (SIC 7310)

Field	Total	Percent of industry employment	Relative error
Total	730	0.45	(1)
Scientists	310	.19	(1)
Statisticians	110	.07	38.73
Systems analysts	200	.12	(1)
Technicians	420	.26	(1)
Computer programmer	300	.19	(1)
Engineering technicians	120	.07	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Consumer credit reporting and collection agencies (SIC 7320)

Field	Total	Percent of industry employment	Relative error
Total	550	0.71	(1)
Scientists	200	.26	(1)
Systems analysts	200	.26	(1)
Technicians	350	.45	(1)
Computer programmer, business	290	.38	21.84
Computer programmer, scientific and technical	60	.07	30.93

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Mailing, reproduction, commercial art, and stanogography (SIC 7330)

Field	Total	Percent of industry employment	Relative error
Total	1,410	1.08	(1)
Engineers	120	.09	(1)
Field unspecified	120	.09	(1)
Scientists	330	.25	(1)
Social scientists	70	.05	(1)
Systems analysts	260	.20	(1)
Technicians	960	.74	(1)
Computer programmer	360	.28	(1)
Drafter	530	.41	36.52
All other engineering technicians	70	.05	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Services to dwellings and other buildings (SIC 7340)

Field	Total	Percent of industry employment	Relative error
Total	470	0.08	(1)
Engineers	220	.04	(1)
Mechanical	160	.03	37.43
Other, n.e.c	60	.01	(1)
Scientists	10	(1)	(1)
Systems analysts	10	(1)	(1)
Technicians	240	.04	(1)
Engineering technicians	240	.04	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

News syndicates (SIC 7350)

Field	Total	Percent of industry employment	Relative error
Total	420	5.90	(1)
Engineers	50	.70	(1)
Electrical/electronic	50	.70	35.84
Scientists	20	.28	(1)
Systems analysts	20	.28	(1)
Technicians	350	4.92	(1)
Computer programmer	60	.84	(1)
Electrical/electronic technicians	290	4.08	24.38

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Personnel supply services (SIC 7360)

Field	Total	Percent of industry employment	Relative error
Total	20,070	3.23	(1)
Engineers	6,260	1.01	(1)
Electrical/electronic	2,210	.36	30.69
Industrial	370	.06	32.28
Mechanical	890	.14	23.10
Safety	60	(1)	29.74
Other, n.e.c.	2,730	.45	(1)
Scientists	1,150	.17	(1)
Mathematical scientists	100	.01	(1)
Physical scientists	110	.01	(1)
Social scientists	70	.01	(1)
Systems analysts	870	.14	(1)
Technicians	12,660	2.05	(1)
Computer programmer	1,390	.22	(1)
Drafter	5,040	.83	22.37
Electrical/electronic technicians	3,580	.59	32.26
Mechanical engineering technicians	1,200	.19	45.01
Industrial engineering technicians	150	.02	36.41
Civil engineering technicians	490	.08	46.79
All other engineering technicians	580	.09	(1)
Science technicians	230	.03	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Computer and data processing services (SIC 7370)

Field	Total	Percent of industry employment	Relative error
Total	100,520	30.20	(1)
Engineers	4,740	1.41	(1)
Electrical/electronic	3,760	1.13	14.90
Mechanical	160	.04	40.08
Other, n.e.c	820	.24	(1)
Scientists	39,870	11.99	(1)
Statisticians	100	.03	39.21
All other mathematicians	180	.05	(1)
Physical scientists	140	.04	(1)
All other social scientists	70	.02	(1)
Systems analysts	39,380	11.85	20.00
Technicians	55,910	16.80	(1)
Computer programmer, business	34,050	10.25	5.26
Computer programmer, scientific and technical	10,020	3.01	10.17
Drafter	1,020	.30	29.73
Electrical/electronic technicians	9,880	2.97	13.35
Mechanical engineering technicians	180	.05	27.52
All other engineering technicians	410	.12	(1)
Mathematical technicians	350	.10	33.64

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Miscellaneous business services (SIC 7390)

Field	Total	Percent of industry employment	Relative error
Total	173,800	11.86	(1)
Engineers	49,270	3.36	(1)
Aeronautical	1,530	.10	40.24
Chemical	3,940	.27	47.78
Civil	2,980	.20	17.19
Electrical/electronic	16,380	1.13	28.83
Industrial	2,870	.19	25.69
Mechanical	7,330	.50	23.00
Metallurgists and metallurgical	1,310	.09	49.00
Petroleum	650	.04	43.62
Safety	410	.02	40.72
Other, n.e.c	11,870	.82	(1)
Scientists	56,510	3.83	(1)
Mathematicians	1,560	.10	41.46
Statisticians	1,930	.13	20.28
All other mathematicians	1,110	.07	(1)
Chemists	9,600	.66	16.51
Earth scientists	1,590	.11	34.92
Oceanographers	210	.01	48.53
Physicists	3,750	.26	35.70
All other physical scientists	2,540	.17	(1)
Agricultural scientists	1,380	.09	34.29
Biological scientists	5,210	.36	21.67
All other life scientists	860	.05	(1)
Economists	2,430	.16	25.90
Psychologists	2,190	.15	26.86
Sociologists	770	.05	42.91
Urban and regional planners	800	.05	32.95
All other social scientists	6,310	.43	(1)
Systems analysts	14,270	.98	47.55
Technicians	68,020	4.67	(1)
Computer programmer, business	7,160	.49	14.00
Computer programmer, scientific and technical	6,620	.45	17.38
Drafter	12,370	.85	13.10
Electrical/electronic technicians	12,420	.86	18.17

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Miscellaneous business services (SIC 7390)

Field	Total	Percent of industry employment	Relative error
Mechanical engineering technicians	2,760	0.19	34.26
Civil engineering technicians	3,880	.26	22.98
All other engineering technicians	14,900	1.03	(1)
Science technicians	7,410	.51	26.34
Mathematical technicians	500	.03	39.11

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Automobile rentals and leasing, without drivers (SIC 7510)

Field	Total	Percent of industry employment	Relative error
Total	580	0.48	(1)
Scientists	160	.13	(1)
Systems analysts	160	.13	30.46
Technicians	420	.35	(1)
Computer programmer	420	.35	23.20

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Automobile parking (SIC 7520)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	10	0.02	(1)
Technicians	10	.02	(1)
Field unspecified	10	.02	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Automobile repair shops (SIC 7530)

Field	Total	Percent of industry employment	Relative error
Total	140	0.03	(1)
Technicians	140	.03	(1)
Computer programmer	140	.03	33.49

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Electrical repair shops (SIC 7620)

Field	Total	Percent of industry employment	Relative error
Total	14,130	16.09	(1)
Engineers	2,130	2.42	(1)
Electrical/electronic	2,040	2.32	23.14
Other, n.e.c	90	.10	(1)
Scientists	160	.18	(1)
Systems analysts	160	.18	42.74
Technicians	11,840	13.49	(1)
Computer programmer	110	.12	31.15
Drafter	180	.20	33.12
Electrical/electronic technicians	11,440	13.05	5.01
All other engineering technicians	110	.12	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Watch, clock, and jewelry repair (SIC 7630)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	20	0.35	(1)
Technicians	20	.35	(1)
Field unspecified	20	.35	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Reupholstery and furniture repair (SIC 7640)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	10	0.04	(1)
Technicians	10	.04	(1)
Field unspecified	10	.04	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Miscellaneous repair shops and related services (SIC 7690)

Field	Total	Percent of industry employment	Relative error
Total	360	0.40	(1)
Technicians	360	.40	(1)
Electrical/electronic technicians	260	.29	42.79
All other engineering technicians	100	.11	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Motion picture production and services (SIC 7810)

Field	Total	Percent of industry employment	Relative error
Total	2,670	3.30	(1)
Engineers	490	.61	(1)
Electrical/electronic	490	.61	29.50
Scientists	130	.16	(1)
Systems analysts	130	.16	29.17
Technicians	2,050	2.53	(1)
Computer programmer	230	.28	25.56
Electrical/electronic technicians	270	.33	41.60
Sound recording and reproduction technicians	1,190	1.48	16.99
All other engineering technicians	360	.44	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Motion picture distribution and services (SIC 7820)

Field	Total	Percent of industry employment	Relative error
Total	180	1.57	(1)
Technicians	180	1.57	(1)
Field unspecified	180	1.57	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Motion picture theaters (SIC 7830)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	230	0.18	(1)
Engineers	70	.05	(1)
Electrical/electronic	70	.05	33.77
Technicians	160	.13	(1)
Engineering technicians	160	.13	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Dance halls, studios, and schools (SIC 7910)

Field	Total	Percent of industry employment	Relative error
Total	10	0.05	(1)
Technicians	10	.05	(1)
Field unspecified	10	.05	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Theatrical producers, bands, and entertainers (SIC 7920)

Field	Total	Percent of industry employment	Relative error
Total	360	0.40	(1)
Technicians	360	.40	(1)
Electrical/electronic technicians	260	.29	42.79
All other engineering technicians	100	.11	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Bowling alleys and billiard and pool establishments (SIC 7930)

Field	Total	Percent of industry employment	Relative error
Total	10	(1)	(1)
Technicians	10	(1)	(1)
Field unspecified	10	(1)	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Miscellaneous amusement and recreation services (SIC 7990)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	570	0.10	(1)
Engineers	90	.01	(1)
Electrical/electronic	90	.01	28.04
Scientists	70	.01	(1)
Systems analysts	70	.01	37.21
Technicians	410	.08	(1)
Computer programmer	100	.02	35.75
Electrical/electronic technicians	260	.05	19.42
All other engineering technicians	50	.01	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Offices of physicians (SIC 8010)

Field	Total	Percent of industry employment	Relative error
Total	2,190	0.27	(1)
Scientists	2,010	.25	(1)
Biological scientists	120	.01	49.38
Psychologists	1,800	.23	24.51
All other social scientists	90	.01	(1)
Technicians	180	.02	(1)
Computer programmer	180	.02	27.98

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Offices of other health practitioners (SIC 8040)

Field	Total	Percent of industry employment	Relative error
Total	1,850	1.76	(1)
Scientists	1,850	1.76	(1)
Psychologists	1,850	1.76	32.25

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Nursing and personal care facilities (SIC 8050)

Field	Total	Percent of industry employment	Relative error
Total	340	0.02	(1)
Engineers	160	.01	(1)
Field unspecified	160	.01	(1)
Scientists	180	.01	(1)
Psychologists	180	.01	38.15

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Medical and dental laboratories (SIC 8070)

Field	Total	Percent of industry employment	Relative error
Total	690	0.64	(1)
Scientists	440	.41	(1)
Physical scientists	130	.12	(1)
Biological scientists	310	.29	34.84
Technicians	250	.23	(1)
Computer programmer	160	.15	26.40
Science technicians	90	.08	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Outpatient care facilities (SIC 8080)

Field	Total	Percent of industry employment	Relative error
Total	4,770	3.23	(1)
Scientists	4,600	3.12	(1)
Psychologists	4,020	2.73	10.36
All other social scientists	330	.22	(1)
Systems analysts	250	.17	26.82
Technicians	170	.11	(1)
Computer programmer	170	.11	18.18

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Health and allied services, n.e.c. (SIC 8090)

Field	Total	Percent of industry em-ploy-ment	Relative error
Total	300	0.31	(1)
Scientists	220	.23	(1)
Social scientists	160	.17	(1)
Systems analysts	60	.06	32.21
Technicians	80	.08	(1)
Computer programmer	80	.08	29.55

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Legal services (SIC 8100)

Field	Total	Percent of industry employment	Relative error
Total	1,730	0.30	(1)
Scientists	630	.11	(1)
Systems analysts	650	.11	25.06
Technicians	1,080	.19	(1)
Computer programmer	1,080	.19	23.78

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Individual and family social services (SIC 8320)

Field	Total	Percent of industry employment	Relative error
Total	2,830	1.42	(1)
Scientists	2,830	1.42	(1)
Statisticians	150	.07	29.06
Psychologists	2,540	1.28	12.78
Sociologists	80	.04	41.66
All other social scientists	60	.03	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Job training and vocational rehabilitation services (SIC 8330)

Field	Total	Percent of industry employment	Relative error
Total	1,120	0.56	(1)
Scientists	960	.48	(1)
Statisticians	120	.06	24.42
Psychologists	720	.36	13.93
All other social scientists	120	.06	(1)
Technicians	160	.08	(1)
Computer programmer	80	.04	24.11
Engineering technicians	80	.04	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Child day care services (SIC 8350)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	140	0.04	(1)
Scientists	140	.04	(1)
Psychologists	140	.04	31.77

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Residential care (SIC 8360)

Field	Total	Percent of industry employment	Relative error
Total	1,510	0.64	(1)
Scientists	1,510	.64	(1)
Psychologists	1,350	.58	11.15
All other social scientists	160	.06	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Social services, n.e.c. (SIC 8390)

Field	Total	Percent of industry em- ploy- ment	Relative error
Total	2,420	0.98	(1)
Scientists	2,260	.92	(1)
Statisticians	300	.12	24.22
Psychologists	1,430	.59	18.26
Urban and regional planners	150	.06	48.01
All other social scientists	290	.12	(1)
Systems analysts	90	.03	29.53
Technicians	160	.06	(1)
Computer programmer	160	.06	23.18

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Business organizations (SIC 8610)

Field	Total	Percent of industry employment	Relative error
Total	1,350	1.57	(1)
Engineers	260	.30	(1)
Electrical/electronic	90	.10	42.12
Other, n.e.c	170	.20	(1)
Scientists	650	.76	(1)
Statisticians	300	.35	20.06
Economists	160	.19	18.67
Systems analysts	190	.22	13.99
Technicians	440	.51	(1)
Computer programmer	210	.24	14.50
Engineering technicians	120	.14	(1)
Science technicians	110	.13	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Professional membership organizations (SIC 8620)

Field	Total	Percent of industry employment	Relative error
Total	500	1.38	(1)
Engineers	160	.44	(1)
Field unspecified	160	.44	(1)
Scientists	160	.44	(1)
Statisticians	80	.22	20.95
Systems analysts	80	.22	17.58
Technicians	180	.50	(1)
Computer programmer	130	.50	9.51

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Labor unions and similar labor organizations (SIC 8630)

Field	Total	Percent of industry employment	Relative error
Total	130	0.08	(1)
Technicians	130	.08	(1)
Computer programmer	130	.08	16.33

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Civic, social, and fraternal associations (SIC 8640)

Field	Total	Percent of industry employment	Relative error
Total	740	0.22	(1)
Engineers	100	.03	(1)
Field unspecified	100	.03	(1)
Scientists	180	.05	(1)
All other natural and mathematical scientists	70	.02	(1)
Social scientists	110	.03	(1)
Technicians	460	.14	(1)
Computer programmer	160	.05	9.56
Engineering technicians	160	.05	(1)
Science technicians	140	.04	16.20

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Political organizations (SIC 8650)

Field	Total	Percent of industry employment	Relative error
Total	10	0.27	(1)
Technicians	10	.27	(1)
Field unspecified	10	.27	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Religious organizations (SIC 8660)

Field	Total	Percent of industry employment	Relative error
Total	2,970	0.30	(1)
Engineers	390	.04	(1)
Electrical/electronic	390	.04	10.56
Scientists	720	.07	(1)
Statisticians	160	.01	12.30
Systems analysts	560	.06	7.43
Technicians	1,860	.19	(1)
Computer programmer	1,200	.13	5.85
Electrical/electronic technicians	160	.01	14.31
All other engineering technicians	500	.05	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Membership organizations, n.e.c. (SIC 8690)

Field	Total	Percent of industry employment	Relative error
Total	310	0.48	(1)
Scientists	70	.11	(1)
Systems analysts	70	.11	32.09
Technicians	240	.37	(1)
Computer programmer	160	.25	20.82
Engineering technicians	80	.12	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Engineering, architectural, and surveying services (SIC 8910)

Field	Total	Percent of industry employment	Relative error
Total	299,100	51.30	(1)
Engineers	124,360	21.33	(1)
Aeronautical	1,480	.25	28.84
Agricultural	340	.05	28.22
Chemical	4,900	.84	13.27
Civil	49,120	8.45	4.12
Electrical/electronic	22,520	3.87	6.17
Industrial	2,450	.42	19.87
Marine	1,490	.25	32.53
Mechanical	29,240	5.03	5.95
Metallurgists and metallurgical	480	.08	28.10
Mining	400	.06	32.15
Petroleum	990	.17	29.98
Safety	780	.13	38.38
Traffic	620	.10	28.75
Nuclear	1,510	.25	30.85
Other, n.e.c	8,040	1.38	(1)
Scientists	10,580	1.77	(1)
Mathematicians	350	.06	38.88
All other mathematicians	150	.02	(1)
Chemists	590	.10	21.54
Earth scientists	1,380	.23	20.37
Meteorologists	300	.05	30.63
Physicists	1,140	.19	45.99
All other physical scientists	1,050	.18	(1)
Biological scientists	470	.08	40.27
All other life scientists	130	.02	(1)
Economists	250	.04	22.13
Urban and regional planners	740	.12	15.14
All other social scientists	150	.02	(1)
Systems analysts	3,880	.66	39.36
Technicians	164,160	28.20	(1)
Computer programmer, business	980	.16	12.10
Computer programmer, scientific and technical	2,970	.51	13.35
Drafter	98,990	17.04	2.77

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Engineering, architectural, and surveying services (SIC 8910)

Field	Total	Percent of industry employment	Relative error
Electrical/electronic technicians	5,810	1.00	11.64
Surveyor	18,650	3.21	5.83
Mechanical engineering technicians	3,730	.64	12.75
Specification writers, engineering	1,200	.20	11.85
Industrial engineering technicians	150	.02	34.62
Civil engineering technicians	20,150	3.46	6.29
All other engineering technicians	9,320	1.60	(1)
Physical science technicians	940	.16	22.53
Biological science technicians	170	.02	35.69
All other science technicians	830	.14	(1)
Mathematical technicians	270	.04	39.98

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Noncommercial education and research organizations (SIC 8920)

Field	Total	Percent of industry employment	Relative error
Total	31,700	26.90	(1)
Engineers	6,510	5.51	(1)
Aeronautical	280	.23	28.26
Chemical	330	.28	21.70
Civil	100	.08	26.25
Electrical/electronic	3,290	2.81	19.74
Industrial	80	.06	26.12
Mechanical	990	.84	18.68
Metallurgists and metallurgical	230	.19	29.27
Nuclear	140	.11	29.12
Other, n.e.c	1,070	.91	(1)
Scientists	14,970	12.70	(1)
Mathematicians	560	.47	16.22
Statisticians	400	.34	16.34
All other mathematicians	160	.13	(1)
Chemists	1,570	1.34	16.22
Earth scientists	270	.23	45.32
Meteorologists	220	.18	39.42
Physicists	1,480	1.26	19.17
All other physical scientists	520	.44	(1)
Biological scientists	3,030	2.58	14.70
Medical scientists	1,080	.92	17.76
All other life scientists	810	.69	(1)
Economists	740	.63	16.08
Psychologists	710	.60	34.70
Sociologists	620	.52	28.26
Urban and regional planners	280	.23	39.12
All other social scientists	840	.71	(1)
Systems analysts	1,680	1.43	37.23
Technicians	10,220	8.69	(1)
Computer programmer, business	290	.24	14.11
Computer programmer, scientific and technical	1,080	.92	12.55
Drafter	410	.35	17.63
Electrical/electronic technicians	1,990	1.70	20.26
Mechanical engineering technicians	950	.81	30.59

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Noncommercial education and research organizations (SIC 8920)

Field	Total	Percent of industry employment	Relative error
All other engineering technicians	1,060	0.90	(1)
Physical science technicians	1,140	.97	17.45
Biological science technicians	2,490	2.12	14.86
All other science technicians	700	.59	(1)
Mathematical technicians	110	.09	46.56

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Accounting, auditing, and bookkeeping services (SIC 8930)

Field	Total	Percent of industry employment	Relative error
Total	7,640	2.27	(1)
Engineers	220	.06	(1)
Field unspecified	220	.06	(1)
Scientists	4,050	1.20	(1)
Actuaries	120	.03	25.00
Social scientists	140	.04	(1)
Systems analysts	3,790	1.13	37.33
Technicians	3,370	1.01	(1)
Computer programmer, business	2,590	.78	11.82
Computer programmer, scientific and technical	210	.06	34.51
Engineering technicians	570	.17	(1)

See footnotes at end of table.

TABLE C-6 SCIENTISTS, ENGINEERS, AND TECHNICIANS IN EACH NONMANUFACTURING INDUSTRY AS A PERCENT OF TOTAL EMPLOYMENT IN THE INDUSTRY, AND THE RELATIVE ERROR: 1981--con

Services, n.e.c. (SIC 8990)

Field	Total	Percent of industry employment	Relative error
Total	5,880	27.28	(1)
Engineers	400	1.86	(1)
Field unspecified	400	1.86	(1)
Scientists	4,170	19.35	(1)
Actuaries	1,610	7.49	13.17
Mathematicians	90	.41	37.13
Statisticians	80	.37	48.60
Earth scientists	730	3.39	24.54
Meteorologists	550	2.55	41.08
All other physical scientists	170	.79	(1)
Psychologists	420	1.95	39.73
All other social scientists	380	1.76	(1)
Systems analysts	140	.64	55.38
Technicians	1,310	6.07	(1)
Computer programmer, business	160	.74	24.46
Computer programmer, scientific and technical	110	.51	24.85
Drafter	180	.83	38.47
All other engineering technicians	300	1.39	(1)
Science technicians	560	2.60	(1)

1/ Relative error not computed.
NOTE: Because of rounding, components may not add to totals.
SOURCES: Bureau of Labor Statistics and the National Science Foundation.

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S/E Personnel

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"Growth in Science and Engineering Enrollment Accelerated in 1980 to 1981—But Demand May Have Slackened in 1982"	83-300	-----

Detailed Statistical Tables

R&D Funds

Research and Development in Industry, 1981. Funds, 1981; Scientists and Engineers, January 1981	83-325	-----
Federal Funds for Research and Development, Fiscal Years 1982, 1983, and 1984, Volume XXXII	83-319	-----
Academic Science/Engineering: R&D Funds, Fiscal Year 1981	83-308	-----

S/E Personnel

Science and Engineering Doctorates: 1960-82	83-328	In press
Academic Science/Engineering: Scientists and Engineers, January 1982	83-311	-----
Academic Science/Engineering: Graduate Enrollment and Support, Fall 1981	83-305	-----
Characteristics of Doctoral Scientists and Engineers in the United States: 1981	82-332	-----
U.S. Scientists and Engineers: 1980	82-314	-----
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Reports

R&D Funds

Federal Funds for Research and Development, Fiscal Years 1981, 1982, and 1983, Volume XXXI	83-320	In press
Federal Support to Universities, Colleges, and Selected Nonprofit Institutions, Fiscal Year 1981	83-315	$6.50
Trends to 1982 in Industrial Basic Research	83-302	$3.50
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1990 R&D Funding Projections	82-315	$3.50

S/E Personnel

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